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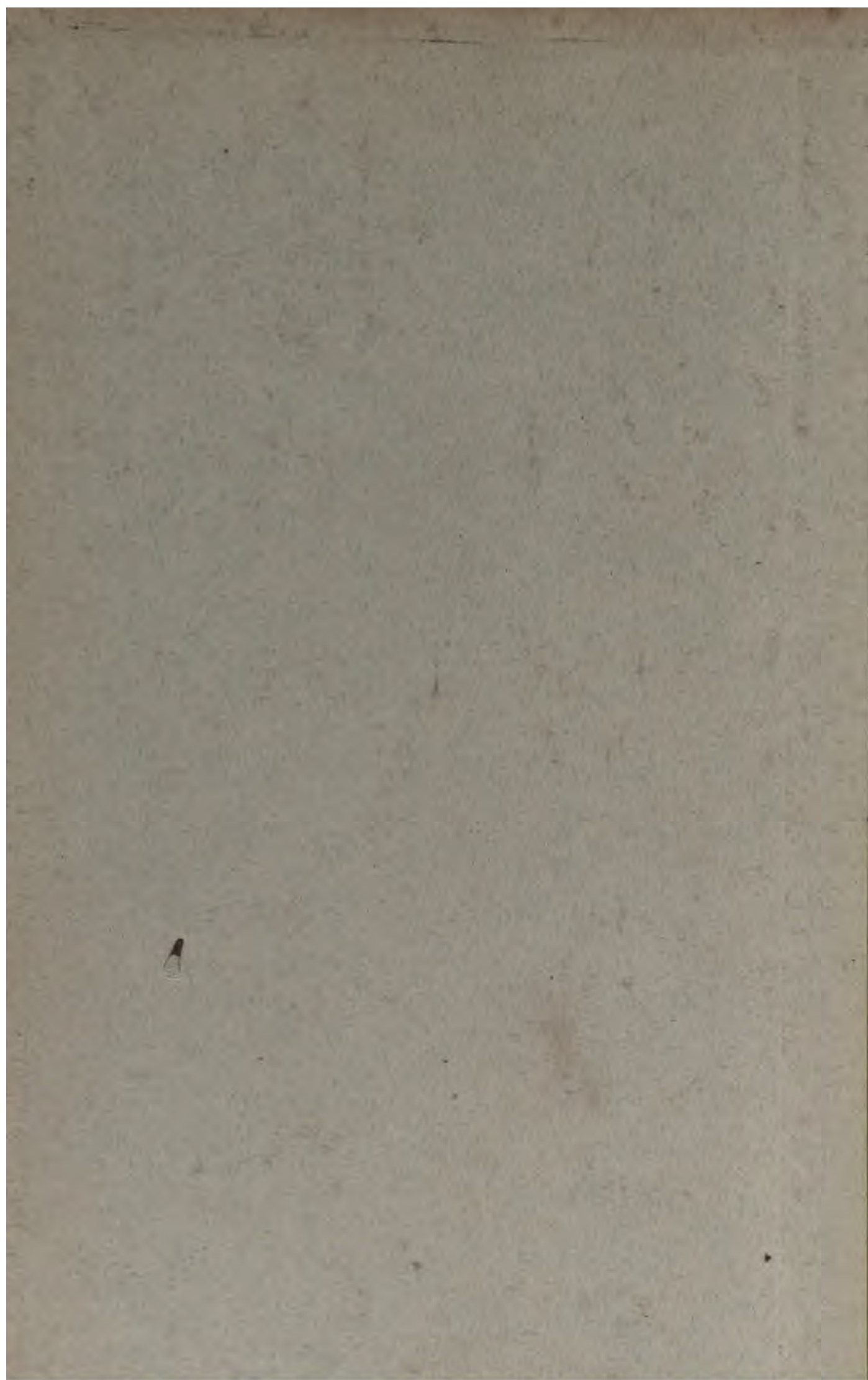
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MINES AND QUARRIES:
GENERAL REPORT AND STATISTICS
For 1897.

PART IV.—COLONIAL AND FOREIGN STATISTICS.

**STATISTICS RELATING TO PERSONS EMPLOYED, OUTPUT,
AND ACCIDENTS AT MINES AND QUARRIES IN THE
BRITISH COLONIES AND IN FOREIGN COUNTRIES.**

EDITED BY

C. LE NEVE FOSTER, D.Sc., F.R.S.,
CHIEF OF HER MAJESTY'S INSPECTORS OF MINES.

Presented to both Houses of Parliament by Command of Her Majesty.



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**STATISTICS RELATING TO PERSONS EMPLOYED, OUTPUT,
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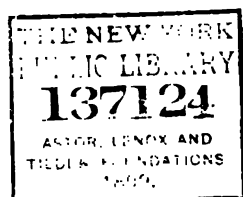


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ROY WOOD
JUN
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CONTENTS.

	PAGE.
Introduction	275
Summary of Persons Employed at Mines and Quarries	278
Summary of Output of Certain Minerals	279
Summary of Accidents and Death-rates per 1,000 Persons employed, at Mines and Quarries	280, 281
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings in the British Empire	283-321
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings in Foreign Countries	322-398
Plate IX.—Diagram showing the Output of Coal in Six of the principal Coal-producing Countries during the Years 1878-1897.	
Plate X.—Diagram showing the Output of Iron Ore in the principal Iron-producing Countries during the Years 1878-1897.	
Plate XI.—Diagram showing ratios of Deaths from Accidents per 1,000 Persons employed in and about all Mines in the principal Mining Countries for the Years 1893-1897.	
Index to Parts I., II., III., and IV.	399

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MINES AND QUARRIES:
GENERAL REPORT AND STATISTICS
For 1897.

PART IV.—COLONIAL AND FOREIGN STATISTICS.

INTRODUCTION.

In accordance with the plan set forth in the Preface Part I the issue of this part has been purposely delayed until the end of the year, with the object of obtaining statistics for the year 1897, from all countries which publish them. Unfortunately, in spite of waiting, it has been impossible to carry out the project in its entirety; the statistics for some countries being either incomplete or wanting. Nevertheless, I have thought it advisable to frame general tables relating to the British Empire and Foreign Countries, which enable some idea to be formed of the number of persons engaged in mining, the output of minerals, and the number of fatalities occurring in mines and quarries all over the world. Some day it may be possible to make such tables fairly complete; in the meantime, the information which is available possesses many points of interest.

PERSONS EMPLOYED.

It is impossible, at the present time, to make any strictly accurate comparison between the number of persons employed in the mining industries of the various countries, because some of the official statistics include quarries and others do not, besides which a few include the smelters as well as the miners; nevertheless, it may certainly be said that in point of numbers our country is far ahead of all the others. Exclusive of persons engaged at brine wells, and at shallow diggings for brickearth, sand, gravel, &c. less than 20 feet deep, the United Kingdom employs more than 850,000 persons at mines and quarries; and the British Empire certainly more than one and a quarter million. This figure forms a large proportion of the $3\frac{1}{2}$ millions, standing as the total for the world, and will still form a large proportion, after due allowance has been made, for the incompleteness of the statistics.

OUTPUT.

In table 277 I have restricted the comparison to coal, gold, iron ore, and a few other minerals; in the case of coal it has been deemed advisable to include all kinds of solid mineral fuel, viz.:—Anthracite, ordinary coal, brown coal, and lignite, omitting peat.

Coal.—The United Kingdom is at present the most important producer of coal, but the rapid growth of coal mining in various parts of the United States, as apparent from the curve in diagram (Plate No. IX.) and the knowledge of its enormous resources, lead to the belief that the mother country will eventually have to yield its position to the younger branch of the Anglo-Saxon race. The British Empire, as a whole, produces more than two-fifths of all the coal raised in the world.

Copper.—The figures in the next column do not furnish a proper basis for comparison, because some countries state their output as ore, and others as metallic copper. The United States with the enormous output of 223,000 tons of metal, produce more than half the copper of the world, and Spain and Portugal together about one-eighth.

Gold.—In the race of the gold producing countries the South African Republic has been rapidly gaining upon the United States, and, though a little behind in 1897, will take the first place for the current year. In 1897 it may be said approximately that these two countries and Australasia each produced more than one-fifth of the world's supply. The only other country needing mention is Russia, with nearly one-tenth of the total.

Iron.—Tables which merely show tons of ore without stating the average percentages of metal must be read with caution ; but, whether judged by the gross weight of the ore or by the actual amount of metal present, the United States take the lead among the iron yielding countries. Great Britain comes next as a producer of iron, and is followed by Germany with its 10 million tons of ore derived mainly from the poorer but easily wrought deposits of Alsace-Lorraine. Spain ranks fourth with a production of 7 million tons of ore ; but in comparing its position with that of Germany, the higher percentage of metal in the Spanish ores should be borne in mind. In the same way the low percentage of iron in the ore produced in Luxemburg must be considered in comparing its output of 5 million tons with that of France, Russia and Austria-Hungary.

The production of iron ores in the principal countries during the past 20 years is illustrated by a diagram (*see* Plate X.).

Lead.—Spain is the greatest lead-producing country in the world ; it is followed at no great distance by the United States. Germany produces little more than half the total output of Spain.

Petroleum.—Russia and the United States are the two great petroleum producers. In the British Empire, Canada and Burma are the only oil regions deserving mention at the present time, though their output is, comparatively speaking, small.

Salt.—The United States and the United Kingdom produce about 2 million tons of salt each, Russia $1\frac{1}{2}$ million, Germany $1\frac{1}{2}$ million, India about 1 million.

Silver.—Here again the United States are the largest producers, followed closely by Mexico. Australasia furnishes an output nearly equal to one-third of that of the United States, and Bolivia and Germany approximately the same amount.

Tin.—The Malay Peninsula is *facile princeps* as regards the production of tin, probably yielding nearly two-thirds of the world's supply ; and when aided by other British Possessions fully three-quarters.

Zinc.—The mines of Upper Silicia alone would suffice to make the German Empire *par excellence* the zinc-producing country of the whole world. The United States, after a long interval, take the second place in the list.

It must be carefully remembered in making the comparison, that many valuable minerals are not mentioned in the table : for instance, Cape Colony produces diamonds to the value of $4\frac{1}{2}$ millions yearly ; Italy has no equal for its sulphur, Chili for its nitrate of soda, Germany for its potassium salts, Spain for its quicksilver, and the United States for their phosphates.

DEATHS FROM ACCIDENTS.

The total number of deaths from accidents at mines and quarries probably falls little short of 4,000 annually. It is not unnatural with our large mining population, that about one quarter of these happen in the United Kingdom. The relative safety of the occupation in each country must be judged, not by the total number of deaths, but by the ratio between that number and the number of persons employed. We have every reason for congratulation in seeing the place taken by this country. Few of the great mining countries can boast of such general freedom from accident. The comparison of death-rates, which may be greatly influenced by one disaster, should extend over more than two years, if possible, and I have therefore prepared a diagram, Plate XI., giving the results of five years for some of the principal mining countries. In explanation of the high death-rates prevailing in the diamond and gold mines of South Africa, the nature of the working population must be recollected. Many of the workmen are natives, more or less new to the industry, ignorant of the dangers which threaten them, utterly devoid of fear, and often imperfectly acquainted with the language of their superiors. Where such conditions prevail, one must not be surprised at death-rates very largely exceeding those of more civilised miners with hereditary instincts and life-long training, which act as important safe-guards in their vocation.

C. LE NEVE FOSTER.

HOME OFFICE,
22nd December, 1898.

SUMMARIES.

**PERSONS EMPLOYED—OUTPUT—ACCIDENTS,
1896-1897.**

TABLE No. 276.

SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the YEARS 1896 and 1897.

Country.	1896.	1897.
GREAT BRITAIN AND IRELAND ...	838,632	852,083
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS :—		
Bahamas	*	*
Barbados	*	*
British Guiana	4,700†	*
British New Guinea	*	325
British North Borneo	*	*
Canada (a)	13,775	9,890
Cape Colony	12,991	14,318
Ceylon	13,807†	*
Channel Islands	1,200	1,200
Cyprus	*	*
Federated Malay States	176,384†	127,930
Gold Coast	*	*
India	81,907	*
Leeward Islands (Redonda)	*	140
Malta	*	*
Natal (including Zululand)	1,523	1,981
Newfoundland	*	*
New South Wales... ..	39,938	41,208
New Zealand	16,826	17,221
Queensland... ..	12,806	14,887
South Australia	1,725†	*
Tasmania	4,303	5,530
Trinidad	*	*
Victoria	33,023	33,804
Western Australia... ..	20,236	17,903
TOTAL for the BRITISH EMPIRE...	1,273,776	—
FOREIGN COUNTRIES :—		
Austria-Hungary	208,164	197,076†
Bosnia and Herzegovina	1,583	1,494
Belgium	153,864	154,917
Bulgaria	310§	*
Chili... ..	22,485†	*
Denmark	—	—
Greenland	150	*
France	280,496	286,347
Algeria	3,548	*
New Caledonia	2,654§	*
German Empire	446,487	471,907
Greece	6,097§	*
Holland	558	618
Dutch East Indies	23,770	*
Italy... ..	81,382	89,105
Japan	118,517	*
Luxemburg	5,028	5,662
Mexico	46,000||	*
Norway	1,987	*
Peru... ..	83,000||	*
Portugal	2,877	3,446
Roumania	*	*
Russia	239,434	*
Servia	1,433	*
Siam... ..	*	22,000
South African Republic	79,475	85,790
Spain	62,968	65,995
Sweden	12,301	12,681
Switzerland	1,864	1,864
United States (b)	431,707	*
TOTAL for FOREIGN COUNTRIES...	2,318,139	—
TOTAL for the WORLD ...	3,591,915	—

* Information not available. † Persons employed in 1895. ‡ Excluding Ozokerite Mines and Petroleum Wells.
§ Persons employed in 1894. || Estimated.

(a) For British Columbia, Nova Scotia, and Ontario only. (b) Coal Miners only, and Ore Miners of Michigan.

BRITISH EMPIRE.

GREAT BRITAIN AND IRELAND.

WITH THE

ISLE OF MAN.

The following Tables summarize the results of Parts II. and III. of the General Report :—

TABLE 279.

PERSONS EMPLOYED at all the MINES for the Years 1896 and 1897.

Year.	Total Number of Mines.	Below-ground.			Above-ground.			Total Below. and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1896	4,116	576,325	None	576,325	144,364	5,114	149,478	725,803
1897	4,007	578,226	None	578,226	145,413	5,074	150,487	728,713
Increase or decrease ...	— 109	+ 1,901	—	+ 1,901	+ 1,049	— 40	+ 1,009	+ 2,910

TABLE 280.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the
Years 1896 and 1897.

Year.	INSIDE THE QUARRIES, <i>i.e.</i> , inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, <i>i.e.</i> , outside the actual pits, holes, or excavations.			Total Number of Persons employed Inside and Outside the Quarries.
	Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1896	56,115	8	56,123	55,340	1,366	56,706	112,829
1897	58,837	8	58,845	63,063	1,462	64,525	123,370

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 281.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, and other WORKINGS.*

Mineral.	1896.			1897.		
	Quantity.		Value at the Mines and Quarries.	Quantity.		Value at the Mines and Quarries.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Alum clay (bauxite)	7,249	7,365	1,918	13,327	13,541	2,823
Alum shale	Nil.	—	—	611	621	76
Arsenic	3,616	3,674	45,483	4,165	4,232	74,795
Arsenical pyrites	8,808	8,949	8,007	13,137	13,348	10,734
Barytes	23,737	24,118	25,590	22,723	23,088	24,117
Basalt, Diorite, &c....	2,286,999	2,323,700	425,587	2,355,554	2,393,355	441,391
Bog ore	6,652	6,759	1,663	7,124	7,238	1,781
Chalk... ..	3,559,229	3,616,346	157,170	3,858,448	3,920,367	163,595
Chert and Flint	107,967	109,700	17,030	93,710	95,214	16,495
Clay	11,341,782	11,523,790	1,442,069	12,705,196	12,909,084	1,453,128
Coal	195,361,260	198,496,339	57,190,147	202,129,931	205,373,631	59,740,009
Copper ore	8,970	9,114	21,586	7,132	7,246	18,706
Copper precipitate	198	201	2,124	220	223	2,320
Fluor spar	394	400	478	297	302	397
Gold ore	2,765	2,809	4,257	4,517	4,589	6,282
Granite	1,756,816	1,785,009	498,074	1,847,323	1,876,968	552,604
Gravel and sand	1,268,310	1,288,663	90,020	1,356,787	1,378,560	111,332
Gypsum	193,311	196,413	74,538	181,385	184,296	66,978
Iron ore	13,700,764	13,920,628	3,150,424	13,787,878	14,009,140	3,217,795
Iron pyrites	10,017	10,178	4,603	10,583	10,753	4,525
Jet	lbs. 294	kilos. 133	10	lbs. 84	kilos. 31	8
Lead ore	41,069	41,728	303,398	35,338	35,905	275,409
Limestone (other than chalk)	11,011,350	11,188,050	1,215,604	11,003,524	11,180,104	1,155,993
Manganese ore	1,080	1,097	613	599	609	851
Mica	—	—	—	4,983	5,063	1,727
Nickel ore	—	—	—	300	305	300
Ochre, umber, &c.	9,891	10,050	24,688	14,422	14,653	12,997
Oil shale	2,419,525	2,458,353	604,881	2,223,745	2,259,431	555,936
Petroleum	12	12	29	12	12	29
Phosphate of lime	3,000	3,048	5,250	2,000	2,032	3,500
Quartz	519	527	383	452	459	339
Salt	2,022,357	2,054,811	666,618	1,903,493	1,934,039	620,898
Sandstone	4,507,745	4,580,083	1,417,985	4,964,109	5,043,771	1,524,700
Slag	562,293	571,316	15,358	—	—	—
Slates and slabs	586,933	596,352	1,388,256	609,194	618,970	1,649,576
Soapstone	—	—	—	28	28	98
Strontium sulphate	18,042	18,332	5,188	14,987	15,227	4,310
Tin ore	7,663	7,786	295,928	7,120	7,234	254,218
Uranium ore	35	36	1,500	30	30	1,367
Wolfram	43	44	1,355	125	127	2,008
Zinc ore	19,319	19,629	66,553	19,278	19,587	69,154
Total values	—	—	69,088,866	—	—	72,043,801

* This table does not include the produce of quarries less than 20 feet deep except in the case of iron ore, ochre, phosphate of lime, strontium sulphate, and tin ore.

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—*continued.*

TABLE 282.

SUMMARY of the METALS obtainable by SMELTING from the ORES in the above TABLE.

Metal.	1896.			1897.		
	Quantity.		Value at the Average Market Price.	Quantity.		Value at the Average Market Price.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Aluminium	—	—	—	310	315	45,880
Copper	556	565	28,180	518½	528	27,096
Gold	oss. 1,352½	kilos. 42	5,035	oss. 2,032	kilos. 63	7,185
Iron	4,759,446	4,835,824	11,875,474	4,736,667	4,812,679	11,394,779
Lead	30,818	31,313	350,940	26,562	26,988	332,578
Nickel	—	—	—	7½	7½	1,050
Silver	oss. 283,826	kilos. 8,828	36,365	oss. 249,156	kilos. 7,750	28,614
Sodium	—	—	—	85	88	12,750
Tin	4,837½	4,915	307,678	4,453	4,524	291,336
Zinc	7,110	7,224	123,240	7,049	7,162	126,823
Total values	—	—	12,226,912	—	—	12,268,091

TABLE 283.

FATAL ACCIDENTS and DEATHS at all the MINES for the Years 1896 and 1897.

Year	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate from Accidents.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Per 1,000 Persons employed Below-ground.	Per 1,000 Persons employed Above-ground.	Per 1,000 Persons employed Above and Below Ground.
1896	757	129	886	935	130	1,065	1·62	·87	1·47
1897	794	103	897	875	104	979	1·51	·69	1·34
Increase or decrease ...	+ 37	— 26	+ 11	— 60	— 26	— 86	— ·11	— ·18	— ·12

TABLE 284.

DEATHS from ACCIDENTS at QUARRIES* during the Years 1896 and 1897.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate per 1,000 Persons employed.		
	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.
1896	86	31	117	90	34	124	1·60	·60	1·10
1897	89	29	118	93	30	123	1·58	·46	1·00
Increase or decrease ...	+ 3	— 2	+ 1	+ 3	— 4	— 1	— ·02	— ·14	— ·10

* More than 20 feet deep.

BRITISH COLONIES AND DEPENDENCIES.

Bahamas.*

Bay salt is produced in the Bahamas by the solar evaporation of sea water. The total output is unknown.

The exports were as follows :—

TABLE 285.

	Year.	Quantity.		Value.
		Statute Tons.	Metric Tons.	£
	1896	330	335	917
	1897	505	513	1,501

Barbados.†

About 1,030 tons of glance pitch, or “Manjak,”‡ worth 6,850*l.*, were obtained from the northern end of the island in 1897. It is used in the manufacture of paint and varnish.

Petroleum has been discovered in the island, and is now being obtained from various boreholes.

Good building stone is quarried in several places.

British Columbia. (See under CANADA.)

British Guiana.

Like the adjoining part of Venezuela, the British Colony is gold-bearing in many places ; the gold is obtained mainly from alluvial deposits, though much rich auriferous quartz exists. There has been little vein mining up to the present time. The gold industry shows a falling off of nearly 6,000 ozs. during the year 1897–1898.

TABLE 286.

PERSONS EMPLOYED at MINES and ALLUVIAL WORKINGS during the year 1895.§

Kind of Workings.	Below-ground.	Above-ground.	Total.
Mines	50	150	200
Alluvial or Placer diggings	—	4,500	4,500
Total	50	4,650	4,700

* *Blue Books for Bahamas* for 1896 and 1897.

† *Annual Report for Barbados for 1896*.—*Colonial Report*, No. 199.—London, 1897 [C.—8278.—23], p. 16.—Bluebook for the Colony of Barbados, 1897.

‡ Merivale, “Occurrences and Mining of Manjak in Barbados,” *Trans. Inst. M.E.*, Vol. XIV., p. 539, and Vol. XVI., p. 33.

§ Official Return furnished by the Department of Mines, Georgetown.

BRITISH GUIANA—continued.

TABLE 287.

QUANTITY and VALUE of the MINERALS produced in 1896-7 and 1897-8.*

Mineral.	Financial Year 1896-7.			Financial Year 1897-8.		
	Quantity.		Value.	Quantity.		Value.
Gold	Statute Tons. oss. 127,479	Metric Tons. kilos. 3,965	£ 471,214	Statute Tons. oss. 121,490	Metric Tons. kilos. 3,778	£ 443,866†
Granite... ..	4,967	5,048	1,270	3,110	3,160	795
Total value	—	—	472,484	—	—	444,161

The table below shows the output of the principal districts.

TABLE 288.

Gold obtained.‡

District.	Financial Year 1896-97.	Financial Year 1897-98.
	Ozs.	Ozs.
Barima	30,148	20,309
Cuyuni	26,908	26,569
Essequibo	23,559	23,091
Potaro	30,891	33,288
Other districts	15,973	18,233
Total output in ozs. ...	127,479	121,490
" " kil. ...	3,965	3,779

British New Guinea.§

The only statistics regarding the minerals of New Guinea relate to gold.

TABLE 289.

Year.	Gold produced.||		Value.
	Ozs.	Kil.	£
1893-94	1,128	35	3,906
1894-95	728	23	2,565
1895-96	1,373	43	4,735
1896-97	7,148	222	25,018

The number of miners on the gold-fields fell off from 700 or 800 in 1888-9 to about 40 in 1891-2; but again increased to over 200 in 1894-5 owing to the discovery of a new gold-field at Murna or Woodlark, and prospecting is being vigorously pursued along the course of the rivers, N.E. coast, with rather encouraging prospects. During the early part of the year 1897 the mining population of Woodlark increased to 400 men, but towards the end of the year this number was reduced to 250.

* Report of the Commissioner of Mines for the year 1897-8, and Blue Books for British Guiana (Georgetown) for 1896, Z, pp. 1 and 2; and 1897, Z, pp. 1 and 2.

† Calculated on the export value.

‡ Report of the Commissioner of Mines for 1897-8. Georgetown, p. 17.

§ Australasian Statistics for 1895. Adelaide, 1897, p. 33; and Annual Report on British New Guinea for 1896-7. Brisbane, 1898, pp. xix. and xxi.

|| Gold entered at Cooktown, Queensland, as received from British New Guinea, no other record being available.

British North Borneo.

Borneo contains rich mineral deposits of various kinds, such as antimony ore, coal, diamonds, gold, petroleum, and quicksilver ore; though not largely worked at the present time, they are likely to become of much importance when the means of communication are improved.

Coal is worked in the island of Labuan, and its harbour is now an important coaling station; the adjacent district of Brunei Bay on the main-land is likewise rich in coal, which is shipped at Moara.

The output of coal in Labuan during the last three years has been as follows:—

TABLE 290.

Year.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£
1895*	39,973	40,614	17,976
1896*	46,449	47,194	20,989
1897†	41,587	42,254	27,031

The coal is stated to be very suitable for steamships, and it is used for tin-smelting at Singapore.‡

Various parts of Borneo are auriferous, and the gold is obtained partly from quartz veins and partly from alluvia. It is proposed to work some of the gravel beds in British North Borneo by dredging.

Canada.

Asbestos.—The Canadian asbestos, which mineralogically is chrysotile, occurs in small veins in serpentine in the eastern townships of the province of Quebec.

Coal.—The coalfields, which have been most largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent bituminous coal is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, and Springhill coalfields, in Nova Scotia. The coal of the Pacific coast, which, on the other hand, is of Cretaceous age, is derived from collieries at Nanaimo, Wellington, and Comox, in Vancouver Island. Coal likewise occurs in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams occurring near Cochrane improve in quality, and yield bituminous coal. Further west, again, is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of the Rocky Mountains, where the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel will soon be rendered available for industrial purposes by the construction of a branch line by the Canadian Pacific Railway Company. All these coals are of Cretaceous age.

Copper.—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec. In the first of these provinces copper pyrites occurs in connexion with pyrrhotite and gold, especially at the rising town of Rossland, whose mines are already supplying large and important smelting works.

* *Blue Books for Labuan*, for 1895 and 1896.

† Figures furnished by the British North Borneo Co.

‡ *The British North Borneo Herald, Sandakan*, 16th August 1896. "Tin-smelting at Pulo Brani, Singapore," by J. McKillop and T. F. Ellis. *Min. Proc. Inst. C.E.*, Vol. CXXV., 1895-1896, Part III.

CANADA—continued.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the east for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metal is abstracted.

Gold.—At the present time the chief gold-producing provinces of the Dominion are British Columbia, the Yukon region of the North-West Territories, Nova Scotia, and Ontario.

The alluvial deposits which made the Cariboo district so famous about the year 1859 are very far from being exhausted, and are being worked by the hydraulic and other methods. Dredging the beds of rivers is being attempted in several places. The auriferous copper ores of the Rossland district are largely swelling Canada's output of the precious metal. Workable deposits of gold are by no means confined to the two districts of British Columbia just named; in fact, the metal is found in greater or less quantities in very many parts of this immense, but thinly inhabited and imperfectly explored, province.

At the present moment all gold-producing districts sink into insignificance when one reads of the productiveness of the diggings in the far north-west of the Dominion at the head waters of the Yukon River and its tributaries, such as the Klondike. No authentic record of the output appears to be available.

The gold of Nova Scotia is derived from free-milling quartz veins, and it is encouraging to note that the production of the province is increasing.

Ontario is not yet producing a large quantity of gold, though the labours of prospectors have proved the existence of auriferous veins over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east. The output from various stamp mills affords good grounds for believing that gold mining will become an important industry in Ontario.

Granite and Miscellaneous Building Stones.—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

Graphite.—This mineral is obtained in the provinces of Ontario and Quebec from crystalline limestone in the Laurentian rocks.

Gypsum.—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occurs in the form of spotlessly white alabaster. Ontario, likewise, produces gypsum.

Iron Ore.—Though endowed with large supplies of iron ore in many of its provinces, the Dominion of Canada is as yet a small producer, for its total output is considerably less than one-hundredth that of the United States.

Lead Ore.—The mineral resources of British Columbia are by no means confined to gold. This province is a large producer of argentiferous lead ore, and the new discoveries of the Kootenay district render it probable that the output will go on increasing.

Mercury.—The only cinnabar mine in the Dominion was opened a short time ago on Kamloops Lake in British Columbia, near the Canadian Pacific Railway.

Mica.—This mineral is beginning to be mined more extensively in various places. The "white mica" (muscovite) occurs in granite and felspar veins, whilst the "amber mica" (phlogopite) is associated with apatite in pyroxenic rocks.

Natural Gas.—The Lower Silurian rocks, when buried, yield areas containing natural gas in a few places, such as at Port Colborne and Kingsville, in Southern Ontario.

Nickel.—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The present supply could be very largely increased.

Petroleum.—The principal petroleum district at the present time is in Southern Ontario, and the value of the output forms an important item in the statistics of the Colony.

Phosphate of Lime.—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also

CANADA—continued.

to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from Florida, prices have dropped, and working the Canadian apatite is no longer so profitable as it was.

Salt.—Thick beds of salt occur in Southern Ontario, in the Onondago division of the Silurian rocks. The brine is pumped up and evaporated.

Silver.—The lead ores of British Columbia are often highly argentiferous, and to the increased yield of the Kootenay district must be ascribed the notable rise in the production of silver in the Dominion.

The rich silver ores in the Thunder Bay district of the province of Ontario are not being largely worked at the present time.

Slate.—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.

TABLE 291.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1896 and 1897.*

Mineral or other product.	1896.†			1897.‡		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Asbestos	10,937	11,112	88,327	22,555	22,917	66,719
Baryta	129	131	147	510	518	629
Coal	3,344,389	3,398,058	1,484,891	3,460,894	3,516,433	1,497,177
Coke	44,303	45,014	22,656	70,367	71,496	43,134
Copper (fine, contained in ore).	4,193	4,200	209,992	5,938	6,033	308,560
Felspar	868	882	531	1,138	1,156	720
Fireclay	842	856	371	1,717	1,746	1,183
Flagstones	—	—	1,379	—	—	1,477
Gold	ozs. 134,498	kil. 4,183	571,251	ozs. 299,421§	kil. 9,313	1,271,918
Granite	16,712	16,980	21,927	—	—	15,411
Graphite	124	126	1,943	—	—	—
Gravel and Sand ...	200,687	203,908	16,461	—	—	—
Grindstones	3,315	3,368	6,228	—	—	8,219
Gypsum	184,850	187,816	36,588	214,010	217,444	50,246
Iron ore	82,059	83,376	39,361	63,796	64,820	36,722
" chromic	2,091	2,125	5,549	2,354	2,392	6,673
Lead	10,804	10,977	148,183	17,419	17,699	287,025
Limestone for flux in smelting iron ore.	33,448	33,985	7,426	—	—	8,219
Manganese ore ...	110	112	817	—	—	—
Marble	200	203	494	—	—	—
Mercury	lbs. 4,437	kil. 2,013	399	lbs. 688	kilos. 256	67
Mineral water ...	22,959	litres 3,209,377	galls. 706,372	—	—	28,767
Mica	—	—	12,329	—	—	15,411
Natural gas	—	—	56,774	—	—	66,960
Nickel	1,517	1,541	244,313	1,785	1,814	287,502
Ochres	2,109	2,143	3,297	3,487	3,543	4,841
Petroleum	galls. 25,438,770	litres 115,579,983	237,462	galls. 24,844,995	litres 112,882,191	207,852
Phosphate of lime ...	509	517	703	811	824	819
Platinum	—	—	154	—	—	1,356
Pyrites	30,103	30,586	20,785	34,741	35,298	23,986
Salt	39,250	39,880	34,924	—	—	39,041
Sand (moulding) ...	5,124	5,206	2,358	4,897	4,975	2,246
Silver	ozs. 3,205,343	kilos. 99,697	441,679	ozs. 5,558,446	kilos. 172,885	682,789
Slate	—	—	10,966	—	—	8,794
Soapstone	366	372	253	—	—	—
Tripolite	593	603	2,047	—	—	—
Building materials:—						
Bricks	—	—	328,767	—	—	—
Building stone ...	—	—	205,479	—	—	—
Cement, natural ...	63,129	64,142	12,432	—	—	—
" Portland	69,987	71,110	29,004	—	—	—
Lime	—	—	133,562	—	—	—
Pottery	—	—	33,581	—	—	—
Sewer pipe	—	—	31,618	—	—	—
Terra cotta	—	—	17,230	—	—	—
Total value ...	—	—	4,547,607	—	—	5,767,613

* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1896 and 1897.

† Revised figures.

‡ Preliminary Return, subject to revision.

§ Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

CANADA—continued.

The mining industries of some of the provinces of the Dominion are sufficiently important to deserve separate notices.

BRITISH COLUMBIA.*

At the present time the principal mining regions of British Columbia are the Kootenay, Cariboo, Omenica, and Cassiar; though their wealth depends largely upon gold, other valuable minerals are known to occur, and it is impossible to say what may not still be found in a country so thinly populated and so imperfectly prospected.

In the Kootenay region there are the important gold mines of Rossland, the silver lead mines of Slocan, whilst valuable seams of coal near the Crow's Nest Pass have simply been waiting for the Canadian Pacific Railway to be opened up.

The rich alluvial gold beds of Cariboo attracted diggers forty years ago, and are now affording large quantities of the precious metal to companies employing hydraulic mining.

Omenica and Cassiar, lying to the north, form a link between Cariboo and its latest and now best-known rival Klondike.

TABLE 292.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	894,882	909,242	552,465	882,854	897,022	544,225
Coke	615	625	632	17,832	18,118	18,320
Copper	1,705	1,732	39,231	2,377	2,415	54,701
Gold, Alluvial... ..	ozs. 27,201	kilos. 848	111,786	ozs. 25,676	kilos. 798	105,517
" from quartz veins, &c.	ozs. 62,259	kilos. 1,936	255,653	ozs. 106,141	kilos. 3,301	436,195
Lead	10,803	10,977	148,290	17,340	17,618	285,728
Silver	ozs. 3,135,343	kilos. 97,519	431,649	ozs. 5,472,971	kilos. 170,228	672,502
Other minerals	—	—	3,082	—	—	31,151
Total value	—	—	1,542,728	—	—	2,148,339

The total value of the mineral output of British Columbia was 40 per cent. greater in 1897 than it was in 1896; this enormous increase in one year is specially due to greater activity in the lead mines of the Slocan Division and gold mines of the Trail Creek Division. It is confidently predicted that 1898 will show similar progress.

TABLE 293.

DEATHS from ACCIDENTS at COAL MINES during the Years 1896 and 1897.

Cause of Accident.				No. of Persons Killed.	
				1896.	1897.
<i>Underground:</i>					
Falls of coal ... ..	...	...	...	3	1
" rock ... ..	...	...	...	2	2
Explosion of gas ... ..	...	...	...	1	—
Crushed by car ... ..	...	...	...	1	3
<i>Surface:</i>					
Railways ... ..	...	...	...	2	—
Total ... ..	...	...	...	9	6

* Annual Report of the Minister of Mines for British Columbia for 1896 and 1897.

CANADA--BRITISH COLUMBIA—continued.

TABLE 294.

DEATH-RATE FROM ACCIDENTS at COAL MINES during the Years 1896 and 1897.

	Year.	Number of Persons Employed.	Death-rate per 1,000 Persons Employed.
	1896	2,753	3.27
	1897	2,413	2.49

NOVA SCOTIA.*

TABLE 295.

PERSONS EMPLOYED at COAL MINES during the Years ended 30th September 1896 and 1897.

Year.	Below-ground.			Above-ground.			Construction.			Total Above and Below.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1896	3,822	638	4,460	1,335	165	1,500	51	1	52	6,012
1897	3,320	506	3,826	1,121	180	1,301	47	1	48	5,175

The average numbers of persons employed at gold mines during the years ending 30th September 1896 and 1897 were 554 and 715 respectively.

TABLE 296.

QUANTITY of MINERALS produced during the Years ending 30th September 1896 and 1897.

Mineral.	Year ending 30th September 1896.		Year ending 30th September 1897.	
	Quantity.		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Coal	2,235,472	2,271,239	2,320,916	2,358,161
Coke	58,741	59,684	45,000	45,722
Copper ore	10	10	—	—
Gold	ozs. 26,112	kilos. 812	ozs. 26,964	kilos. 838
Graphite	175	177	—	—
Gypsum	130,489	132,577	125,000	127,006
Iron ore	56,334	57,235	44,146	44,854
Limestone	31,171	31,670	25,000	25,402
Manganese ore	129	131	100	102

* Reports of the Department of Mines for Nova Scotia, 1896 and 1897.

CANADA.—NOVA SCOTIA—continued.

TABLE 297.

DEATHS from ACCIDENTS at MINES during the Years ending 30th September 1896 and 1897.

Year.	Kind of Mines.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
1896 ...	Coal	10	1.66
	Gold	2	3.61
1897 ...	Coal	7	1.35
	Gold	1	1.40

ONTARIO.*

TABLE 298.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1896 and 1897.

Kind of Working.	1896.	1897.
Copper and nickel	485	535
Gold	189	430
Iron	125	130
Other workings	4,211	1,207
Total	5,010	2,302

TABLE 299.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.

Mineral or other Product.	* 1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Calcium carbide	—	—	—	513	521	7,077
Copper	1,668	1,695	26,848	2,455	2,494	41,110
Gold... ..	ozs. 7,154	kilos. 222	25,037	ozs. 11,412	kilos. 355	39,091
Graphite	580	580	2,671	357	363	1,747
Gypsum	3,125	3,175	2,158	1,544	1,569	3,688
" calcined	625	635	2,106	—	—	—
Iron	25,270	25,675	72,695	21,438	21,782	59,204
Natural gas	—	—	56,858	—	—	63,380
Nickel	1,740	1,768	73,356	1,785	1,814	75,901
Petroleum :—						
Illuminating oils ...	galls. 11,342,880	litres 51,535,809	259,568	galls. 10,891,337	litres 49,484,332	232,414
Lubricating oils ...	" 2,283,047	" 10,372,928	42,112	" 1,959,810	" 8,904,314	41,046
All other oils ...	" 7,821,262	" 35,535,575	69,874	" 8,970,974	" 40,759,243	73,639
Paraffin wax ...	684	695	15,668	955	970	18,160
Fuel product ...	—	—	14,551	—	—	—
Salt	40,014	40,656	42,105	48,827	49,611	51,345
Building materials :—						
Bricks, tiles, pipes, &c. ...	—	—	206,449	—	—	44,897
Building stone, &c. ...	—	—	80,959	—	—	—
Cement, Portland ...	barrels 77,760	—	28,403	barrels 96,325	—	34,994
" rock	60,705	—	9,062	" 84,670	—	15,642
Lime	bushels 1,880,000	decalitres 6,833,360	45,205	—	—	—
Total value ...	—	—	1,075,685	—	—	801,335

* Reports of the Bureau of Mines for Ontario for 1896 and 1897, Toronto.

CANADA.—ONTARIO—*continued.*

TABLE 300.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES during the Years 1896 and 1897.

Kind of Mine.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1896.	1897.	1896.	1897.
Copper	1	—	2.06	—
Gold	2	1	10.58	2.33

Cape Colony.*

TABLE 301.

PERSONS EMPLOYED † during the Years 1896 and 1897.

Class of Mine.	Below-ground.			Above-ground.			Total for 1897.			Total for 1896.
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.	
Coal	90	1,588	1,678	70	444 ‡	514	160	2,032	2,192	1,650
Copper Ore...	—	—	—	—	—	—	—	—	1,709	1,611
Diamond ...	397	3,539	3,936	1,500	4,981	6,481	1,897	8,520	10,417	9,730

TABLE 302.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos (exported)	20	20	232	46	47	490
Coal	105,365	107,050	80,813	113,851	115,678	91,001
Copper ore	37,375	37,973	372,315	38,977	39,603	384,879
Grocidolite (exported)	7	7	755	15	15	1,676
Diamonds	carats 3,558,191	kilos. 731	4,646,487	carats 3,485,333	kilos. 716	4,454,376
Fireclay	—	—	—	440	447	Not stated.
Gold	ozs. 129	kilos. 4	451	ozs. 76	kilos. 2	266
Salt, white (exported)	126	128	297	10	10	26
Total value	—	—	5,100,899	—	—	4,932,714

* *Statistical Registers for 1896 and 1897, Cape Town, and Report of the Inspector of Mines for Kimberley, &c., for 1897, Cape Town.*

† Exclusive of a few persons employed in getting asbestos and salt.

‡ 58 of these persons were females.

CAPE COLONY—continued.

Coal.—Coal mining, which is carried on principally in the Indwe, Cyphergat, and Molteno districts, is progressing; and the output of the collieries in 1897 was double that of 1895.

Copper ore.—Namaqualand produces all the copper ore.

Diamonds.—The diamond industry overshadows all other kinds of mining in the Colony, and is dealt with separately in the official statistics.

*Kimberley Diamond Mines.**

TABLE 303.

PERSONS EMPLOYED each Year from 1893 to 1897.

Year.	Under-ground.			Above ground.			Total Above-ground and Under-ground.		
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.
1893 ...	434	3,292	3,726	1,329	4,498	5,827	1,763	7,790	9,553
1894 ...	404	2,654	3,058	1,177	3,261	4,438	1,581	5,915	7,496
1895 ...	376	3,029	3,405	1,322	4,779	6,101	1,698	7,808	9,506
1896 ...	436	3,111	3,547	1,522	4,661	6,183	1,958	7,772	9,730
1897 ...	397	3,539	3,936	1,500	4,981	6,481	1,897	8,520	10,417

TABLE 304.

DEATHS from ACCIDENTS each Year from 1893 to 1897.

Year.	Place.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
1893 ...	Under-ground ...	4	30	34	9.22	9.11	9.12
	Above-ground ...	1	13	14	.75	2.89	2.40
	Total... ..	5	43	48	2.84	5.52	5.02
1894 ...	Under-ground ...	2	47	49	4.95	17.71	16.02
	Above-ground ...	1	5	6	.85	1.53	1.35
	Total... ..	3	52	55	1.90	8.79	7.34
1895 ...	Under-ground ...	2	23	25	5.32	7.59	7.34
	Above-ground ...	3	8	11	2.27	1.67	1.80
	Total... ..	5	31	36	2.94	3.97	3.79
1896 ...	Under-ground ...	2	30	32	4.59	9.64	9.02
	Above-ground ...	—	14	14	—	3.00	2.26
	Total... ..	2	44	46	1.02	5.66	4.73
1897 ...	Under-ground ...	3	21	24	7.56	5.93	6.10
	Above-ground ...	2	8	10	1.33	1.61	1.54
	Total... ..	5	29	34	2.63	3.40	3.26

Though still high, the general death-rate from accidents at the Kimberley diamond mines shows decided signs of improvement, and the figure for 1897 is the best during the past six years.

* Report of the Inspector of Mines for Kimberley, &c., for 1897. Cape Town.

CAPE COLONY—*continued.**Kimberley Diamond Mines.*

TABLE 305.

CAUSES of ACCIDENTS in 1896.*

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes	5	—	12	12	—	—	—
Falls of ground	37	1	10	11	2	29	31
Falling down “passes”	2	—	—	—	—	2	2
Falling down shafts	2	—	2	2	—	—	—
Falls from ladders... ..	2	—	—	—	—	2	2
Whilst ascending shaft by ma- chinery.	3	—	—	—	1	10	11
Machinery in shaft	1	—	1	1	—	—	—
On tramways or by trucks	4	—	1	1	1	2	3
Timber falling down shaft	2	—	—	—	2	—	2
Blasting	7	1	4	5	1	6	7
Total	65	2	30	32	7	51	58
<i>Surface and Open Works.</i>							
Falls of ground and débris	12	—	5	5	1	9	10
On tramways or by trucks	12	—	3	3	2	7	9
Falling down open works	4	—	1	1	—	3	3
Machinery	4	—	3	3	—	1	1
Blasting	4	—	2	2	—	3	3
Miscellaneous	9	—	—	—	2	7	9
Total	45	—	14	14	5	30	35
Totals (above and below ground)	110	2	44	46	12	81	93

TABLE 305—*continued.*

CAUSES of ACCIDENTS in 1897.*

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes... ..	1	1	1	2	—	—	—
Falls of ground	29	—	11	11	2	19	21
Falling down "passes"	5	—	2	2	—	3	3
Falling down shafts	2	2	1	3	—	—	—
Falls from ladders... ..	2	—	1	1	—	1	1
Whilst ascending or descending shafts by machinery.	1	—	—	—	1	—	1
Ground falling from bucket whilst sinking shafts.	2	—	—	—	—	2	2
On tramways or by trucks	10	—	1	1	1	8	9
Explosion of gas	—	—	—	—	—	—	—
Explosion	10	—	4	4	4	6	10
Miscellaneous	3	—	—	—	—	3	3
Total	65	3	21	24	8	42	50

* Reports of the Inspector of Mines for Kimberley, &c., for 1896 and 1897, Cape Town.

CAPE COLONY—*continued.**Kimberley Diamond Mines.*CAUSES of ACCIDENTS in 1897—*continued.*

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Surface and Open Works.</i>							
Falls of ground and débris ...	7	1	2	3	—	8	8
On tramways or by trucks ...	28	—	—	—	—	29	29
Machinery	11	—	3	3	1	7	8
Falls from ladders	—	—	—	—	—	—	—
Blasting	3	—	1	1	1	1	2
Miscellaneous	12	1	2	3	4	11	15
Total	61	2	8	10	6	56	62
Totals (above and below ground)	126	5	29	34	14	98	112

In addition to the deaths at Kimberley, the following accident was reported, during the year 1897, from other workings for diamonds*—

One coloured person was killed by machinery at Smith's Prospect Mine.

As the number of persons employed is not stated, no death-rate can be calculated.

Ceylon.†

Plumbago is the most important mineral produced in Ceylon ; it occurs in gneiss and mica schist, and the workings are sometimes carried on to a depth of 150 yards. 368 pits and mines were worked for this mineral during the year 1896.

The diggings for precious stones, such as rubies, sapphires, spinels, chrysoberyls, garnets, zircons, and moonstones, do not yield a very valuable harvest, though the sum stated in the official return for the year 1895 is probably below the mark. There is no record of the quantity obtained in 1896.

The salt is obtained from salt lagoons or "pans," but none appears to have been collected during the year 1896.

"Cabook" is a local name for laterite, the most useful building stone in the island.

The Blue Book for 1897 has not yet reached this country.

TABLE 306.

PERSONS EMPLOYED at MINES and OPENWORKS during the Year 1895.

Kind of Workings.	Under-ground.			Above-ground.			Total Number of Persons Employed in Mines and Openworks.
	Males.	Females.	Total.	Males.	Females.	Total.	
Mines	5,373	—	5,373	3,275	1,301	4,576	9,949
Openworks	—	—	—	3,708	150	3,858	3,858
Totals	5,373	—	5,373	6,983	1,451	8,434	13,807

* Report of the Inspector of Mines for Kimberly, &c., for 1897, Cape Town.

† Official Return furnished by the Government of Ceylon and Blue Books of Ceylon, Colombo, for 1895 and 1896.

CEYLON—continued.

TABLE 307.

QUANTITY and VALUE of the MINERALS produced during the Years 1895 and 1896.

Mineral.	1895.			1896.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Granite	cubes 8,104	—	4,862	cubes 6,753	—	2,448
Grinding stones (exported) ...	pkges. 206	—	33	pkges. 195	—	20
Plumbago	13,494	13,711	151,241	10,298	10,463	82,881
Precious stones and pearls ...	pkges. 64	—	2,601	—	—	—
Salt	37,142	37,738	152,823	—	—	—
Stone for building :— "Cabook"	blks. 2,499,750	—	7,499	blks. 2,547,200	—	4,617
Talc (exported)	256	260	2,731	—	—	2,636
Total value	—	—	321,820	—	—	92,802

TABLE 308.

DEATHS from ACCIDENTS at MINES and OPENWORKS during the Year 1895.

Kind of Workings.	Under-ground.			Above-ground.			Total Below and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	19	—	19	—	—	—	19	3·54	—	1·91
Openworks...	—	—	—	2	—	2	2	—	·52	·52
Totals ...	19	—	19	2	—	2	21	3·54	·24	1·52

Channel Islands.

The stone quarrying industry of the Channel Islands is of considerable importance ; the number of persons employed is about 1,200.

TABLE 309.

QUANTITY and VALUE of STONE exported during the Years 1896 and 1897.*

Mineral and Islands where obtained.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Granite and other stones, squared or rough (estimated) ...	292,032	296,718	163,926	331,128	336,442	195,787
Flint, white	—	—	163,926	—	—	195,787

* Annual Statistics of Trade of the United Kingdom for 1897, p. 831.

Cyprus.*

TABLE 310.

QUANTITY and VALUE of the MINERALS produced during the Financial Years 1895-6 and 1896-7.

Minerals.	1895-6.			1896-7.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gypsum ...	1,869	1,899	1,083	937	952	533
Salt (exported) ...	1	1	2	1	1	3
Umber ...	2,893	2,939	1,434	1,537	1,562	777
Total value ...	—	—	2,519	—	—	1,313

In addition to these minerals, sandstone and limestone are quarried for building and other purposes ; but the quantities are unknown.

Federated Malay States.†

The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The ore is obtained almost exclusively from alluvial deposits worked as open quarries.

Hydraulic mining has lately been introduced for the purpose of working tin deposits in the Kinta district.‡

A certain amount of vein mining§ is being carried on. At the mines of the Pahang Corporation at Kuantar, Pahang, about 30,000 tons of crude tin ore are being stamped yearly, with a yield of about 960 tons of tin oxide (*black tin*), or 3½ per cent. This yield corresponds very closely with that of Dolcoath mine in Cornwall (Part III., p. 256) which is 3½ per cent.

The total number of Coolies employed at the alluvial mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1897 amounted to 127,930, of whom 116,306 were employed underground, and 11,600 were engaged at works connected with the mines.||

TABLE 311.

SUMMARY of QUANTITY and VALUE of MINERALS produced in or exported from the four States during the Years 1896 and 1897.

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold ...	21,217	kilos. 660	77,270	27,340	kilos. 850	104,893
Tin ...	34,161	34,709	1,991,669¶	29,291	29,761	1,706,678††
Tin ore ...	12,312	12,509	442,437**	12,909	13,117	590,172‡‡
Total value ...	—	—	2,511,376	—	—	2,401,743

* *Blue Books for Cyprus for 1895-6 and 1896-7.*

† These are as follows :—Perak, Selangor, Pahang, and the Negri Sembilan (including minor States). A useful general map of these States is contained in *The Colonial Office List for 1898*, p. 222.

‡ Wray, "Some account of the Tin Mines and the Mining industries of Perak." *Perak Museum Notes*, Vol. II., No. 2, p. 81. Taiping, 1898.

§ Derrick, "Notes on Lode Tin Mining in the Malay Peninsula." *Trans. Inst. Min. and Met.* (Paper read 19th October, 1898).

|| Official Return furnished by the Mines Department, Seremban, Negri Sembilan.

¶ Including £1,528 for which no quantity is stated.

** " £35,337 " " "

†† Including £842 for which no quantity is stated.

‡‡ " £32,288 " " "

FEDERATED MALAY STATES—*continued.*

TABLE 312.

NEGRI SEMBILAN.

Mineral.	1896.*			1897.†		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin (exported)	1,434	1,457	84,618	1,201	1,220	73,912
Tin ore „	2,147	2,181	22,178	2,529	2,570	102,641

TABLE 313.

PAHANG.‡

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold (exported)	ozs. 21,217	kilos. 660	77,270	ozs. 26,240	kilos. 816	98,638
Tin „	—	—	1,528	—	—	841
Tin ore „	—	—	35,337	—	—	32,288

TABLE 314.

PERAK.§

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold (production)	—	—	—	ozs. 1,100	kilos. 34	4,285
Tin (exported)	22,542	22,904	1,336,820	20,702	21,034	1,240,424

* *Annual Report of the State of Negri Sembilan for 1896*, Kuala Lumpur, 1897, pp. 6 and 25.† *Annual Report of the State of Negri Sembilan for 1897*, Kuala Lumpur, 1898, pp. 6, 21 and 22.‡ *Annual Report of the State of Pahang for 1897*, Kuala Lumpur, 1898, pp. 10, 11 and 32.§ *Perak Administration Report for 1897*, Taiping, Perak, 1898, pp. 3, 4 and 28.

FEDERATED MALAY STATES—*continued.*

TABLE 315.

SELANGOR.*

Mineral.	1896.			1897.		
	Quantity. (Exported.)		Value.	Quantity.† (Output.)		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold (exported) ...	—	—	—	—	—	1,970
Tin ...	10,185	10,348	568,703	7,388	7,507	391,501
Tin ore ...	10,165	10,328	384,922	10,380	10,547	455,243

Gold Coast.‡

The quantity and value of gold exported in 1896 and in 1897 was as follows :—

TABLE 316.

Metal.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Ozs.	Kilos.	£	Ozs.	Kilos.	£
Gold ...	23,940	745	86,186	23,555	732	84,797

The principal gold mines are situated in Wassaw, on the western limits of the Protectorate. The ores of silver, mercury, lead, tin, copper, and iron have been found, and quarries of sandstone abound throughout the settlement.

India.

Much valuable information concerning mines and other mineral workings is contained in the two annual official publications “Review of Mineral Productions in India for 1896,”§ by Mr. George Watt, C.I.E., and the “Report of the Inspection of Mines in India, for the year ending 31st December 1897,”|| by Mr. James Grundy, Inspector of Mines in India.

The three most important minerals worked are :—coal, gold ore, and salt. The total output of coal in 1897 was 4,063,127¶ tons, or about 200,000 tons more than that of the

* *Annual Report of the State of Selangor for 1897*, Kuala Lumpur, 1898, pp. 7 and 34.

† 7,416 statute tons of tin and 15,635 statute tons of tin ore, valued at £392,986 and £685,715 respectively, were exported during the year.

‡ *Blue Books for Gold Coast for 1896 and 1897.*

§ Calcutta, 1897, price 12 annas.

|| Calcutta, 1897, price two rupees.

¶ Watt *Op. cit.*, p. 73.

INDIA—continued.

previous year. About three-quarters of the coal produced in India comes from Bengal; the remainder is obtained from the North West Provinces and Oudh, Punjab, Central Provinces, Assam, Burma, Central India, the Nizám's Dominions, and Baluchistan.

In his report for 1896 Mr. Grundy states that cobalt mining is an industry of some importance in Jeypore.

The most important mineral industry in India is gold mining; small quantities of the precious metal are washed from river sands in very many parts of the country, but the total amount so obtained is insignificant with the output of the quartz veins of Mysore. The value of the gold obtained is nearly double that of the coal.

The sources of the salt supply are: (a) lakes and pits of Rajputana; (b) evaporation of sea water in various places; (c) rock-salt mines of the Punjab, Kohat, and Mandi State, and brine wells of the Punjab.

The oil wells in Burma, where petroleum has been obtained for more than 2,000 years, furnish most of this mineral; and the output of the province in 1896 shows an increase of 14 per cent. compared with the previous year, and 30 per cent. compared with the average of the past three years.

The chief ruby mines are in Upper Burma.

No complete return of persons employed at mines in India has appeared since the one prepared by Mr. Grundy last year.

TABLE 317.

PERSONS EMPLOYED in and about MINES in INDIA for the Years ending
30th June 1896.*

Kind of Mines.	Below-ground.			Above-ground.			Total Below and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
Coal	20,041	7,190	27,231	17,273	9,251	26,524	53,755
Cobalt ore	1,224	—	1,224	700	400	1,100	2,324
Copper ore	1,180	—	1,180	440	20	460	1,640
Gold	6,697	—	6,697	5,200	849	6,049	12,746
Gypsum	175	—	175	—	—	—	175
Iron ore	65	—	65	80	44	124	189†
Manganese ore	—	—	—	700	500	1,200	1,200
Mica	1,974	464	2,438	1,225	1,256	2,481	4,919
Plumbago	70	—	70	80	54	134	204
Rubies, sapphires, spinels, and garnets	214	—	214	490	2	492	706
Salt	696	537	1,233	96	—	96	1,329
Stone, limestone, slate, &c.	454	54	508	762	40	802	1,310
Total	32,790	8,245	41,035	27,046	12,416	39,462	81,907

* Report on the Inspection of Mines in India for the year ending 30th June 1896. By James Grundy, Calcutta, 1897, pages 77 and 78.

† Exclusive of some persons employed for two months only.

INDIA—continued.

TABLE 318.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1896 and 1897.*

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	Rs.	Statute Tons.	Metric Tons.	Rs.
Alum	411	418	(Not stated)	411	418	(Not stated)
Amber	cwts. 14	kilos. 711	2,330	cwts. 26½	kilos. 1,348	4,990
Antimony	(Not stated)	—	—	(Not stated)	—	—
Asbestos	lbs. 672	kilos. 304	48	lbs. 560	kilos. 254	40
Borax (exported)	535	340	1,20,138	276	280	94,488
Clay	373,298	379,289	4,18,474	558,098	567,054	4,47,669
Do.	452,047	459,301	(Not stated)	445,554	452,704	(Not stated)
Coal	3,848,013	3,909,764	1,22,60,270	4,063,127	4,128,330	1,24,66,588
Copper ores	21	22	840	32	33	275
Corundum	130	132	4,809	121	123	3,749
Do.	20	20	(Not stated)	203	208	(Not stated)
Diamonds	carats 321	grams 66	22,017	carats 301	grams 62	19,031
Fuller's earth	—	—	—	313	318	500
Gold	ozs. 342,808	kilos. 10,662	2,12,58,470	ozs. 389,028	kilos. 12,100	2,23,25,758
Granite	378,074	384,141	4,99,108	318,322	323,430	5,17,525
Do.	444,424	451,556	(Not stated)	304,978	309,872	(Not stated)
Gravel and rubble	18,247	18,540	9,509	34,370	34,922	23,156
Do. do.	—	—	—	6,153	6,252	(Not stated)
Gypsum	7,485	7,605	1,066	8,058	8,187	4,390
Iron ores	13,776	13,997	88,900	43,314	44,009	1,52,300
Jade	150	152	1,50,341	115	117	83,436
Laterite	328,055	333,319	2,80,941	373,479	379,472	3,76,296
Do.	5,447,145	5,534,559	(Not stated)	5,925,238	5,020,322	(Not stated)
Limestone	388,251	394,481	5,13,166	1,070,298	1,087,474	7,82,693
Do.	729,692	741,402	(Not stated)	761,613	773,835	(Not stated)
Manganese ores	56,869	57,782	4,51,932†	73,680	74,862	(Not stated)
Mica	310	315	3,42,470	446	453	1,99,003
Do.	23	23	(Not stated)	246	250	(Not stated)
Ochre	(Not stated)	—	—	(Not stated)	—	—
Petroleum	galls. 15,057,094	litres 68,411,274	17,93,355	galls. 19,128,828	litres 86,911,027	22,63,772
Plumbago	—	—	—	60	61	(Not stated)
Rubies	(Not given)	—	6,87,537	—	—	8,02,452
Salt	1,026,744	1,043,221	54,79,284	923,118	937,932	48,76,298
Sandstone	277,566	282,020	3,22,082	186,301	189,291	1,93,315
Do.	707,912	719,272	(Not stated)	755,123	767,241	(Not stated)
Slatestone	(Not stated)	—	2,922	(Not stated)	—	2,561
Slate	15,724	15,976	38,833	17,128	17,403	40,408
Do.	6,401	6,504	(Not stated)	9,041	9,186	(Not stated)
Soapstone	169	172	240	149	151	209
Soapstone	652	663	10,879	969	984	15,660
Do.	271	275	(Not stated)	117	119	(Not stated)
Stone, miscellaneous	43,003	43,963	23,440	66,720	67,791	31,006
Do. do.	35,764	36,338	(Not stated)	22,212	22,565	(Not stated)
Tin ore	81	82	81,443	61	62	39,555
Trap	91,544	93,013	21,787	104,919	106,603	78,519
Do.	14,712	14,948	(Not stated)	33,621	34,161	(Not stated)
Tourmaline	lbs. 280	kilos. 129	57,750	lbs. 560	kilos. 254	(Not stated)

TABLE 319.

OUTPUT and VALUE of MINERALS, classified according to the PROVINCES or STATES, for the Years 1895 and 1896.‡

Mineral and Province or State where wrought.	1895.			1896.		
	Quantity.		Value.	Quantity.		Value.
INDIA.	Statute Tons.	Metric Tons.	Rupees.¶	Statute Tons.	Metric Tons.	Rupees.¶
Aden.§	29,554	30,028	1,74,188	44,311	45,022	2,62,757
Salt	—	—	—	—	—	—
Total value in £ sterling	—	—	£9,616	—	—	£14,506

* Watt. *Review of the Mineral Production in India for 1896 and 1897*, Calcutta, 1897 and 1898.

† Estimated from export value.

‡ *Review of Mineral Production in India for 1895 and 1896*, Calcutta. The figures for 1897 arrived too late for insertion of details in this Report.

§ Aden is under the administration of the Government of Bombay.

¶ The value of the rupee has been calculated at 1s. 1½d.

INDIA—continued.

OUTPUT and VALUE of MINERALS, classified according to PROVINCES or STATES, for the Years 1895 and 1896—continued.

Mineral and Province or State where wrought.	1895.			1896.		
	Quantity.		Value.	Quantity.		Value.
INDIA—cont.						
Ajmere-Merwara.	Statute Tons.	Metric Tons.	Rupees.	Statute Tons.	Metric Tons.	Rupees.
Clay	23,910	24,294	2,350	8,266	8,399	790
Granite... ..	35,050	35,612	7,000	11,745	11,933	2,300
Limestone	9,964	10,124	1,295	1,968	2,000	272
Sandstone	28,198	28,650	14,805	2,202	2,237	1,205
Stone, miscellaneous	—	—	—	55	56	375
Total value in Rupees ...	—	—	24,950	—	—	4,942
„ „ in £ sterling	—	—	£1,377	—	—	£273
Assam.						
Coal	172,717	175,489	12,08,375	177,259	180,104	12,35,052
Limestone	62,788	63,795	69,857	76,346	77,571	83,239
Petroleum	galls. 36,435	litres 165,541	7,287	galls. 238,730	litres 1,084,660	23,873
Total value in Rupees ...	—	—	12,85,519	—	—	13,42,164
„ „ in £ sterling	—	—	£70,971	—	—	£74,099
Bengal.						
Borax (exported)	385	392	1,35,098	329	334	1,17,359
Clay	66,276	67,340	(Not stated)	69,037	70,145	(Not stated)
Coal	2,716,155	2,759,743	86,03,205	3,037,920	3,086,671	81,46,411
Granite	55,926	56,823	(Not stated)	29,948	30,429	13,183
Gravel and rubble	—	—	—	18,135	18,426	9,397
Iron ore	32,207	32,724	97,091	6,120	6,218	11,965
Laterite	47,882	48,650	(Not stated)	43,040	43,731	(Not stated)
Limestone	82,532	83,856	9,898*	48,434	49,211	19,888†
Mica	348	354	3,16,290	309	314	3,42,333
Salt	7,663	7,786	56,204	8,507	8,644	59,636
Sandstone	79,544	80,820	(Not stated)	25,495	25,904	(Not stated)
Slate	38,880	39,504	—	1,068	1,085	—
Soapstone	45	46	—	59	60	—
Trap	4,902	4,981	50‡	5,885	5,979	—
Berar.						
Clay	420	427	210	670	681	335
Granite	162,349	164,954	3,812	99,761	101,362	2,227
Laterite	680	691	340	540	549	270
Limestone	1,414	1,437	1,267	928	943	832
Stone, miscellaneous	4,444	4,515	1,850	—	—	—
Trap	16,348	16,610	(Not stated)	91,509	92,977	21,537
Total value in Rupees ...	—	—	—	—	—	25,201
„ „ in £ sterling	—	—	—	—	—	£1,391
Coorg.						
Clay	1,832	1,861	(Not stated)	1,925	1,956	(Not stated)
Granite	5,568	5,657	16,704	15,648	15,899	46,944
Laterite	128	130	128	149	151	149
Madras.						
Borax (exported)	0.5	0.5	730	—	—	—
Clay	331,624	336,946	(Not stated)	381,085	397,122	(Not stated)
Coal	1,737	1,765	8,685	—	—	—
Corundum	13	13	(Not stated)	20	20	(Not stated)
Gold	ozs. 1,383	kilos. 43	91,328	ozs. 1,917	kilos. 60	1,13,268
Granite	667,435	678,146	(Not stated)	442,361	449,460	(Not stated)
Gypsum	—	—	—	12	12	—
Iron ore	2,828	2,873	1,930	2,296	2,333	1,920

* Value for 68,705 tons only.

† Value for 18,018 tons only.

‡ Value of 1,223 tons only.

INDIA—continued.

OUTPUT and VALUE of MINERALS, classified according to PROVINCES or STATES, for the Years 1895 and 1896—continued.

Mineral and Province or State where wrought.	1895.			1896.		
	Quantity.		Value.	Quantity.		Value.
INDIA—cont.						
Punjab.	Statute Tons.	Metric Tons.	Rupees.	Statute Tons.	Metric Tons.	Rupees.
Alum	411	418	(Not stated)	411	418	(Not stated)
Coal	72,493	73,656	5,86,275	79,017	80,285	6,59,640
Gold	ozs. 447	kilos. 14	22,612	ozs. 447	kilos. 14	22,612
Iron ore	31	31	378	11	11	39
Petroleum	1,560	7,088	353	2,364	10,741	337
Salt	105,688	107,334	4,98,243	114,650	116,490	5,56,223
Native States.	—	—	—	—	—	—
Copper	—	—	—	21	21	840
Asbestos	cwts. 6	kilos. 304	48	cwts. 6	kilos. 304	48
Clay	269,127	273,446	1,98,505	226,849	230,490	2,55,867
Coal	434,653	441,628	17,40,187	388,639	394,876	14,50,423
Corundum	39	40	2,771	130	132	4,809
Do.	—	—	321	—	—	—
Diamonds	carats 215	grams. 44	19,506	carats 321	grams. 66	22,017
Gold	ozs. 246,894	kilos. 7,679	1,74,34,622	ozs. 340,363	kilos. 10,586	2,11,17,673
Granite... ..	233,232	236,975	4,54,023	217,065	220,548	4,29,748
Gypsum	6,708	6,816	3,880	7,473	7,593	4,066
Iron ore	4,843	4,921	1,63,348	3,522	3,579	70,362
Laterite	324,837	330,050	2,28,387	275,952	280,380	2,31,472
Limestone	269,246	273,567	3,39,711	273,933	278,329	3,69,741
Mica	3	3	244	2	2	137
Ochre	5,673	5,765	682	—	—	—
Salt	253,997	258,073	15,13,683	141,848	144,124	8,15,822
Sandstone	217,326	220,814	*1,47,294	271,737	276,098	3,10,609
Slabstone	—	(Not stated)	2,870	(Not stated)	—	2,922
Slate	14,700	14,936	14,376	15,724	15,976	38,833
Soapstone	215	219	950	640	650	4,879
Stone, miscellaneous... ..	136,326	138,514	64,769	42,948	43,637	23,065
Trap	30	30	235	35	36	250
Total value in Rupees	—	—	2,23,30,412	—	—	2,51,53,583
„ „ in £ sterling	—	—	£1,232,825	—	—	£1,388,687

The following death-rates are based upon the figures given by Mr. Grundy,† which do not, however, relate to the whole of the coal mines of the country.

TABLE 320.

DEATHS from ACCIDENTS at COAL and MICA MINES during the year 1896.†

Class of Mine.	Persons Employed.			Deaths.			Death-rate per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Coal	19,738	14,811	34,549	44	8	52	2.23	.54	1.51
Mica	2,413	3,174	5,587	13	1	14	5.39	.32	2.51

* This amount represents only a part of the value.

† *Op. cit.*, pp. 83 and 85.

INDIA—continued.

TABLE 321.

DEATHS from ACCIDENTS at the MYSORE GOLD MINES.*

Year.	Persons Employed.	Deaths.			Death-rate per 1,000 Persons Employed.		
		Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
1892	11,773	33	1	34	4.77	0.21	2.88
1893	13,930	37	1	38	4.99	0.15	2.73
1894	12,273	36	3	39	5.14	0.57	3.18
1895	12,348	46	4	50	7.01	0.69	4.05
1896	12,273	No returns received.			—	—	—
Average death-rate	—	—	—	—	5.26	0.39	3.13

The death-rates from accidents at the Mysore Gold Mines were certainly very high during the four years, 1892–95; and the appalling catastrophe at Champion Reefs Mine in 1897 will increase the average considerably.

The nature of this accident, by which 52 persons lost their lives, is described at length in Dr. John W. Evans' official report† and by the local press.‡

The 620 men employed below-ground (exclusive of contractors, foremen of gangs (Mestri), and Europeans) were accustomed to ascend to the surface by an inclined shaft, 225 feet deep vertically, provided with two ladderways. The usual inclination of the ladders was 26° from the vertical, and there were four platforms in the shaft, the vertical distance between them varying from 42 to 47 feet.

As a rule the men were not allowed to leave the mine till after 3 p.m. The 11th September 1897, the day of the accident, was a pay-day, and a number of coolies climbed up about 2 o'clock. The watchman at the top prevented their coming out before time, as he said, and beat down with a cane those who tried to get out. The shaft was soon packed with men, and the air became so foul from their breath that before long it caused suffocation. A panic ensued, some of the men fell from the ladders and in the end 44 were taken out dead, whilst 8 succumbed after they were brought to the surface. It has been assumed by some persons that ladder climbing is a safer method of descending into and ascending from mines than riding in a cage; but no such appalling accident as that of Champion Reefs ever happened with winding machinery.

The Mysore Mines are governed by a law entitled, "The Mysore Mines Regulation, 1897," which was passed on the 2nd October of that year. Its object is "to prevent the theft of mining materials, and to provide for the regulation and inspection of mines, and for the sanitation of mines and their neighbourhood."

Leeward Islands. (See REDONDA AND SOMBRERO).

Malta.

A soft oolitic limestone is quarried for building purposes.

Beds of phosphatic nodules and phosphatized rock§ exist in the Island, but do not appear to have been worked at present.

* *Reports of the Inspection of Mines in India for the year ending 30th June 1895*, by J. H. Grundy, p. 30; and for year ending 30th June 1896, p. 86.

† Bangalore, 23rd November 1897.

‡ *The Kolar Gold Fields News*, Oorgaum, 17th September 1897.

§ *Eng. Min. Jour.*, Vol. LIV., 1892, p. 200.

Natal.*

TABLE 322.

PERSONS EMPLOYED at COAL MINES in NATAL (exclusive of ZULULAND) during the Years 1896 and 1897.

Year.	Above and Below Ground.			
	Europeans.	Natives.	Indians.	Total.
1896	67	874	330	1,271
1897	87	1,166	518	1,771

TABLE 323.

QUANTITY and VALUE of COAL produced during the Years 1896 and 1897.

Mineral.	1896.			1897		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	216,106	219,574	212,495	243,960	247,875	243,550

TABLE 324.

DEATHS from ACCIDENTS at COAL MINES during the Years 1894 and 1895.†

Year.	Below-ground.			Above-ground.			Total Below-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1894	1	—	1	—	—	—	1	1·08
1895	1	—	1	—	—	—	1	1·06

ZULULAND.‡

TABLE 325.

PERSONS EMPLOYED in PROSPECTING and MINING during the Years 1896 and 1897.

District.	1896.			1897.		
	White Men.	Natives.	Total.	White Men.	Natives.	Total.
Nqutu	20	20	40	5	10	15
Entonjaneni ...	10	50	60	8	30	38
Nkandhla	12	55	67	18	42	60
Eshowe	2	6	8	—	—	—
Hlabisa	6	20	26	4	12	16
Ubombo	2	4	6	6	7	13
Ndwandwe	1	—	1	—	—	—
Lower Umfolosi ...	14	30	44	10	40	50
Umlalazi	—	—	—	3	15	18
Total	67	185	252	54	156	210

* Return of Commissioner of Mines, published in the *Natal Government Gazette*, Pietermaritzburg, 1st February 1898.

† Official Return furnished by the Commissioner of Agriculture and Mines for Natal.

‡ *Reports on the Mining Industry of Zululand for 1896 and 1897.* Pietermaritzburg, 1897 and 1898.

NATAL.—ZULULAND—*continued.*

1,118 ounces of gold and 57½ tons of coal were obtained in the year.

Though Zululand has now become a province of Natal, it still retains its own Mines Department and mining laws. Judging by the report of the Commissioners of Mines, little has been done beyond prospecting. The mineral wealth of the country is considered to be great; it possesses several extensive coalfields, besides deposits of gold and other metallic ores.

TABLE 326.

FATAL ACCIDENTS at MINES during the Year 1896.

Cause of Accident.	Number of Fatal Accidents.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
By hauling gear	2	2	} 19.9
By unexploded dynamite cartridge	2	3	
Total	4	5	19.9

This high death-rate is probably exceptional, for no accidents were reported during the year 1897.

Newfoundland.

Newfoundland is well-known as a copper-producing country, and Mr. Collins,* from whose pamphlet the following particulars are taken, reckons that it has produced 50,000 tons of fine copper, worth at least three millions sterling, since the ore was first discovered in 1857. He states that the coal resources of the Island are likely to bear valuable fruit in the near future. Gold has been discovered. The hæmatite of Great Bell Island is being shipped on an extensive scale to Nova Scotia. Iron pyrites has been largely worked; rich veins of argentiferous lead ore have furnished supplies for exports at various times. Among other minerals, deposits of antimony ore, arsenical pyrites, asbestos, chrome iron ore, gypsum, petroleum and zinc blende are known to exist and await exploitation.

TABLE 327.

QUANTITY and VALUE of the MINERALS produced during the Years 1896 and 1897.†

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos	—	—	411	—	—	—
Chromite	1,015	1,031	(Not stated)	3,000	3,048	(Not stated)
Copper ore and regulus ...	54,467	55,341	70,824	68,323	69,419	79,422
Iron ore	38,450	39,067	(Not stated)	58,940	59,886	(Not stated)
Iron pyrites	27,274	27,712	39,203	32,790	33,316	47,131
Total value	—	—	110,438	—	—	126,553

* *Newfoundland, its Mineral and Other Resources.* J. H. Collins.

† Return furnished by J. P. Howley, Director of Geological Survey of Newfoundland.

NEW SOUTH WALES—continued.

TABLE 329.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.*

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite	1,372	1,394	4,116	724	736	2,172
Antimony ore	133	135	1,834	169	172	3,612
Bismuth	41	42	490	3	3	800
Chrome ore	3,852	3,914	11,280	3,380	3,434	10,269
Coal	3,909,517	3,972,255	1,125,281	4,383,591	4,453,937	1,230,041
Coke	26,351	26,774	21,851	64,202	65,232	45,392
Copper	4,468	4,540	200,311	6,922	7,033	300,680
Fireclay	34	35	69	—	—	—
Gold	ozs. 296,072	kilos. 9,309	1,073,360	ozs. 292,217	kilos. 9,089	1,088,413
Iron, oxide of, and pig iron	375	381	861	230	234	536
Lead (pig)	24	24	259	32	33	398
Limestone (flux)	88,924	90,351	54,261	67,590	68,675	41,798
Oil shale	31,839	32,350	34,202	34,090	34,637	40,612
Opal	lbs. 1,390	kilos. 519	25,000	lbs. 5,292	kilos. 2,400	95,000
Platinum	ozs. 2,438	kilos. 70	3,479	ozs. 1,966	kilos. 56	2,949
Silver	ozs. 202,789	kilos. 6,307	26,518	ozs. 150,005	kilos. 4,665	16,711
Silver lead and ores (a)	286,939	291,541	1,758,933	289,018	293,656	1,681,528
Tin	1,807	1,836	102,117	1,155	1,174	70,688
Zinc	—	—	—	28,842	29,305	23,688
Sundry minerals (including building stone).	68	69	924	—	—	8,125
Total value	—	—	4,445,086	—	—	4,663,412

(a) As the bulk of the silver is exported in the form of silver-lead, the quantity of fine silver contained therein can only be an approximation. It is stated in the Report of the Department of Mines (p. 72) that 13,661,800 ozs. or 424,930 kilos. of silver were won at some of the principal mines in the Colony during the year 1897.

TABLE 330.

DEATHS from ACCIDENTS at all MINES during the Years 1896 and 1897.†

Kind of Mines.	1896.		1897.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal and shale ...	24	2.54	16	1.60
Gold { alluvial ...	8	0.85	8	0.88
{ quartz ...	14	1.16	7	0.57
Silver and lead ...	12	2.16	14	2.26
Other mines... ..	1	0.34	6	1.60
Total	59	1.48	51	1.24

TABLE 331.

DEATHS from ACCIDENTS at COAL and SHALE MINES during the Years 1896 and 1897.‡

Year.	Number of Deaths from Accidents.			Death-rate per 1,000 persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
1896	22	2	24	2.86	1.14	2.54
1897	15	1	16	1.86	0.53	1.60

* *Ibid.*, 1897, pp. 25 and 72.† *Ibid.*, 1896, pp. 44 and 65, and for 1897, p. 58.‡ *Ibid.*, 1897, pp. 107 and 108.

NEW SOUTH WALES—*continued.*

The regulations made under an Act of Parliament, which was passed to abate the evils of lead poisoning at the Broken Hill mines, have borne good fruits,* as shown by the following table :—

TABLE 332.
BROKEN HILL MINES.

Year.	Number of Persons Employed.	Cases of Lead Poisoning Reported.	Percentage of Persons Affected.
1895	4,297	89	2·07
1896	5,400	44	·81
1897	6,473	17	·26

The serious loss of life at the Broken Hill mines in 1897 led to the appointment of a Royal Commission to inquire into all matters affecting the safety of the workmen. The Commissioner came to the conclusion that the incompetency of men representing themselves as miners, and having no real knowledge of the work, was largely the cause of the accidents. He suggested sundry alterations in the regulations under the Mining Act, 1874.†

New Zealand.

The three important minerals worked in New Zealand are coal, gold, and kauri gum.

The largest coal mines are on the west coast of the Middle Island; Coalbrookdale Colliery produced 184,376 tons, Kaitangata 92,914, and Brunner 85,592 last year. The total output of the colony was 840,713 tons, against 792,851 in 1896. With additional shipping facilities now in progress, it is likely that the output will go on increasing.

Gold is obtained in various parts of the Islands, and the precious metal is extracted from ordinary alluvial diggings, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this method of extraction seems to be coming more and more into favour.

Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives, and the price paid for the semi-fossil resin, £60 per ton, is so great that the value of the output approaches, and has sometimes exceeded, the total value of the coal produced.

TABLE 333.
PERSONS EMPLOYED at COAL MINES during the years 1896 and 1897.‡

Year.	Below-ground.	Above-ground.	Total.
1896	1,347	590	1,937
1897	1,381	531	1,912

* *Annual Report of the Department of Mines and Agriculture for New South Wales for 1897*, Sydney, p. 80.

† *Ibid.*, p. 60.

‡ *Inspection of Coal Mines Reports*. C.—3b, Wellington, 1897 and 1898.

NEW ZEALAND—continued.

TABLE 334.

PERSONS EMPLOYED at GOLD MINES during the Years ended 31st March 1897 and 1898.*

Mining District.	Alluvial Miners.		Quartz Miners.		Total.		Grand Total.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1898.	1897.
Auckland	—	—	3,962	—	3,962	—	3,962	4,872
Marlborough	117	—	10	—	127	—	127	182
Nelson	1,500	628	634	—	2,134	628	2,762	2,560
Westland	2,045	445	27	—	2,072	445	2,517	2,426
Otago	3,399	966	465	—	3,864	966	4,830	4,849
Total	7,061	2,039	5,098	—	12,159	2,039	14,198	14,889

The number of persons employed in dredging during the year 1897 was about 420.†

TABLE 335.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.‡

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony ore	21	21	450	10	10	157
Coal	792,851	805,574	428,648	840,713	854,204	451,915
Coke	105	107	263	—	—	—
Copper ore	—	—	—	—	—	2
Gold	ozs. 263,694	kilos. 8,202	1,041,428	ozs. 251,645	kilos. 7,827	980,204
Kauri gum	7,126	7,240	431,323	6,641	6,748	398,010
Manganese ore	65	66	205	180	182	541
Silver	ozs. 94,307	kilos. 2,933	10,589	ozs. 183,892	kilos. 5,720	20,872
Sundry mixed minerals	37	38	1,335	1,561	1,586	5,892
Total value	—	—	1,914,241	—	—	1,857,593

Compared with the year 1896 there has been a marked improvement in the output of silver, and a decided increase in the production of coal; kauri gum shows a decrease.

* Mines statement by the Hon. A. J. Cadman, Minister of Mines, Wellington, 1898. C.—2, p. 20.

† Report on the Gold Fields of New Zealand, Wellington, 1898. C.—3, p. 132.

‡ Mines statement by the Hon. A. J. Cadman, Minister of Mines, Wellington, 1898. C.—2, p. 14.

NEW ZEALAND—*continued.*

TABLE 336.

DEATHS from ACCIDENTS at MINES and DREDGING WORKS during the Years 1896 and 1897.*

Kind of Workings.	1896.		1897.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Coal mines	66	34.07	4	2.09
Gold mines	4	.27	14	1.00
„ dredgings	—	—	5	11.90

Accidents upon the gold dredges have been so frequent, that it is proposed to introduce special legislation dealing with the industry. The heavy death-rate at coal mines in 1896 is due to the serious explosion at the Brunner Coal Mine.

During the year 1897 an Act of Parliament was passed entitled the “Sunday Labour in Mines Prevention Act, 1897.” It prohibits the employment of manual labour in mines on Sundays, unless the Inspector of Mines has previously given authority in writing, on the ground that labour cannot be suspended on Sunday without risk of injury to the mine or its operations. The Act came into force on January 1st, 1898.

The New Zealand Government has purchased under “The Cyanide Process Gold-extraction Act, 1897,” the patent rights of the MacArthur-Forrest processes, and now issues licenses for the extraction of gold and silver by this method. The royalty payable to the Government depends upon the value of the gold and silver extracted.

Nova Scotia. (*See under CANADA.*)

Ontario. (*See under CANADA.*)

Queensland.†

Gold is the mainstay of the mineral industry of Queensland; the bulk of the precious metal, 95 per cent., comes from quartz mines and the remainder from alluvial diggings. The Charters Towers goldfield yielded nearly one-half and the Mount Morgan goldfield nearly one-fourth of the total output of gold.

* *Papers and Reports relating to Minerals and Mining.* Wellington, 1897. C.—3, p. 100. C.—3a, p. 42. C.—3b, p. 26. 1898. C.—2, pp. 7 and 8.

† *Annual Report of the Under Secretary for Mines for 1897.* Brisbane, 1898, pp. 19, 22, 29, 30, and 125.

QUEENSLAND—continued.

TABLE 337.

PERSONS EMPLOYED at MINES during the Years 1896 and 1897.

Kind of Mines.					1896.	1897.
Coal	...	...	...	...	1,275	1,179
Gold	{	alluvial	...	...	3,182*	5,585†
		vein	...	...	7,182	7,250
Other mines	...	...	...	...	1,167	873
Total					12,806	14,887

TABLE 338.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Bismuth ore	...	...	...	...	...	£ 134
Coal	371,390	377,350	154,987	358,407 ⁴	364,159 ⁴	139,889
Copper ore	580	589	21,042	288	293	12,645
Gold	ozs. 640,385	kilos. 19,918	2,133,041	ozs. 807,928	kilos. 25,129	2,553,141
Gold quartz (exported)†	1,428	1,451	1,428	—	—	—
Lead	618	628	6,180	385	391	4,117
Manganese	300	305	900	397	403	1,506
Opal	—	—	23,300	—	—	10,250
Precious stones (exported)†	—	—	2,346	—	—	1,140
Silver	ozs. 279,284	kilos. 8,686	32,162	ozs. 234,065	kilos. 7,280	25,118
Silver ore (exported)†	179	182	9,270	255	260	7,016
Stone‡ :—						
Bluestone	59,075	60,023	10,742	65,724	66,729	8,233
Granite	100	102	50	6,000	6,098	1,050
Limestone	800	813	160	500	508	50
Porphyry	25,120	25,523	1,487	19,830	20,148	3,545
Sandstone	6,742	6,850	2,818	6,982	7,094	2,546
Slate	1,000	1,016	125	28,625	29,084	4,183
Tin ore	1,554	1,579	49,018	1,203	1,222	37,509
Wolfram ore	3	3	60	13	13	195
Total value	—	—	2,449,116	—	—	2,812,267

The output of gold has risen considerably ; on the other hand, there is a falling off in the quantities of coal, silver, and tin ore.

TABLE 339.

DEATHS from ACCIDENTS at MINES during the Years 1896 and 1897.

Kind of Mines.	1896.		1897.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	3	2.35	2	1.70
Other mines	18	1.56	16	1.17

* Including 758 Chinese.

† " 897 "

‡ Statistics of Queensland for 1897, Brisbane, 1898, pp. 170, 173, and 332.

QUEENSLAND—*continued.*

In January, 1897, a Royal Commission was appointed to enquire into the mining industry with a view to the consolidation of the mining laws and to the removal of certain anomalies. A voluminous report containing the results of a very exhaustive enquiry has now been issued. The Commissioners make no less than 107 separate recommendations. Among these is the establishment of a board for examining candidates for the position of mine managers, but the recommendation does not go so far as to require every mine manager to be certificated. Another important suggestion relates to ventilation. The Commissioners advise* "That a stricter definition of adequate ventilation be proposed, and that it be held to mean not less than 100 cubic feet per man per minute."

Redonda (Leeward Islands).

The number of persons employed in obtaining phosphate of alumina in 1897 was about 140.

TABLE 340.

QUANTITY and VALUE of MINERAL produced during the Years 1894† and 1895.‡

Mineral.	1894.			1895.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	<i>Metric Tons.</i>	£	Statute Tons.	<i>Metric Tons.</i>	£
Phosphate of alumina ...	570	579§	1,105	5,687	5,778	4,976

Rhodesia.

The immediate future of this Colony will largely depend upon the success of the gold-mining operations which are being actively carried on at the present time. Since August four mines have been crushing quartz, and from the reports received the results are very satisfactory. At a number of other mines machinery has likewise been erected, and crushing will shortly commence. The returns for September and October show a monthly yield of about 4,000 ounces. As soon as the other crushing mills are at work, there will be a large increase in the amount of gold produced, fully justifying the prediction made in last year's Report.

However, even if the hopes of the gold-mining companies are not fully borne out by the results of the milling, it must be recollected that large coalfields are known to exist near the Zambesi river and elsewhere, which may be destined some day to exert an important influence on the well-being of British South Africa.

A useful map showing the gold and coal districts of Mashonaland and Matabeleland is found in the Annual Report of the British South African Company for 1896-1897, presented at the fifth general meeting held in April, 1898.

* *Report of the Royal Commission appointed to inquire into the Laws relating to Mining*, Brisbane, 1897. p. lxxi.

† *Annual Statement of the Trade of the United Kingdom for 1894.*

‡ *Official Return furnished by the Government of the Leeward Islands.*

§ Exported.

Sombrero. (LEEWARD ISLANDS.)

The phosphate of lime quarry at Sombrero is no longer worked.

South Australia.

Copper ore is by far the most important mineral of this Colony. It is obtained chiefly from mines in Yorke's Peninsula in South Australia proper. Most of the gold comes from the Northern Territory.

TABLE 341.

PERSONS EMPLOYED at MINES during the Year 1895.*

Below-ground.			Above-ground.			Total Number of Persons Employed in and about the Mines.
Males.	Females.	Total.	Males.	Females.	Total.	
813	Nil.	813	912	Nil.	912	1,725

TABLE 342.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.†

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper (exported) ...	4,603	4,677	219,052	4,705	4,731	238,277
Copper ore „ ...	348	354	3,150	546	555	4,640
Gold ...	ozs. 4,031	kilos. 125	14,350	ozs. 10,322	321	39,020
Gold ore (exported)...	—	—	10	—	—	83
Lead „ ...	49	50	707	82	83	1,146
Mica „ ...	—	—	332	—	—	1,138
Silver Lead „ ...	—	—	194	—	—	1,522
Zinc (Spelter) „ ...	35	36	404	6	6	118
Unenumerated ore (exported)	—	—	15	—	—	7
Total value ...	—	—	238,214	—	—	285,951

TABLE 343.

DEATHS from ACCIDENTS at MINES during the Year 1895.*

Below-ground.	Above-ground.	Total Below and Above Ground.	Death-rate per 1,000 Persons Employed.
5	—	5	2.90

* Official Return furnished by Department of Mines, Adelaide.

† Statistical Register for 1897.

Tasmania.*

Copper now heads the list as the most valuable mineral export of Tasmania ; it is obtained from the great Mount Lyell mine, which also yielded nearly one-third of the gold produced in the Colony. The Tasmania mine, Beaconsfield, with an output of 26,168 ozs., also accounts for a third.

Mount Bischoff continues to be the premier tin mine and to pay regular dividends, though its output has declined. In 1897 it produced 2,256 tons ; this quantity exceeds by 161 tons the output of our largest tin mine in Cornwall, Dolcoath.

TABLE 344.

PERSONS EMPLOYED at the MINES during the Years 1896-97 and 1897-98.

	1896-97.	1897-98.
	4,303	5,530

TABLE 345.

QUANTITY and VALUE of the MINERALS produced during the Financial Years 1896-97 and 1897-98.

Description of Mineral.	1896-97.			1897-98.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	46,674	47,424	37,339	48,501	49,279	38,801
Copper (exported)	1,928	1,961	128,032	4,956	5,035	397,927
Gold	ozs. 56,875	kilos. 1,769	216,138	ozs. 79,981½	kilos. 2,457	313,402
Silver Lead Ore	21,123	21,462	232,350	15,120†	15,363	177,160
Tin	4,507	4,759	265,472	3,229	3,281	199,868
Total value	—	—	879,331	—	—	1,127,158

TABLE 346.

DEATHS from ACCIDENTS at MINES during the Financial Years 1896-97 and 1897-98.

	1896-97.		1897-98.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
	7	1.63	13	2.35

* Report of the Secretary for Mines, 1897-8, Hobart, 1898.

† Estimated to contain 1,486,800 ozs. or 46,245 kilos. of fine silver, on the assumption that 98½ ozs. are contained in one ton of ore.

Trinidad.*

Although coal, glance pitch, gypsum, and galena are to be found, the Colony possesses no mines, properly so called.

The only mineral workings of any consequence are the diggings for asphalt at the well-known Pitch Lake. The insular revenue derived from this source in 1897 was £42,165.

TABLE 347.

QUANTITY and VALUE of ASPHALT exported in the Years 1896 and 1897.

	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
Asphalt, liquid	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
" purified	galls. 5,922	28,906	30	—	—	—
" raw	10,191	10,354	20,286	14,129	14,356	110,543
	86,194	87,577	86,634	110,543	112,317	28,258
Total value	—	—	106,950	—	—	138,801

Victoria.†

/ Mining in Victoria is almost entirely confined to gold. The auriferous areas, which lie mainly among the Silurian rocks, are delineated upon a map published in the useful "Miners' Handbook" issued by the Department of Mines. The output of gold continues to increase, but it is still well under a million ounces, whilst it exceeded three million ounces in 1856. The yield for 1897 was the largest since 1882. Almost one-third of the gold was produced from alluvial deposits and two-thirds from quartz veins. The two principal alluvial districts are Ballarat and Beechworth, whilst the Gippsland and Sandhurst districts are the greatest producers of gold from auriferous quartz.

TABLE 348.

PERSONS EMPLOYED at MINES during the Years 1896 and 1897.

	1896.	1897.
Coal	843	908
Gold	32,123	32,820
Other Mines	57	76
Total	33,023	33,804

TABLE 349.

QUANTITY and VALUE of the MINERALS produced during the Years 1896 and 1897.

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
Antimony	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Building stone	—	—	—	5	5	20
Brown coal	—	—	—	—	—	25,000
Clays	—	—	—	3,918	3,981	1,177
Coal	—	—	—	—	—	4,030
Coal	226,562	230,198	113,012	236,277	240,069	108,640
Gold	ons. 805,087	kilos. 25,041	3,220,348	ons. 812,766	kilos. 25,280	3,251,064
Lignite	5,815	5,908	2,141	800	813	200
Slate and flagging	380	386	97	—	—	—
Tin ore	45	46	1,799	47	48	1,650
Total value	—	—	3,337,397	—	—	3,391,781

* Blue Books, Trinidad and Tobago, 1896 and 1897.

† Annual Reports of the Secretary for Mines for Victoria for 1896 and 1897.

DEATHS from ACCIDENTS at MINES during the Years 1896 and 1897.

Kind of Mines.	1896.		1897.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	4	4.74	3	3.30
Gold	38	1.18	37	1.13
Total	42	1.27	40	1.18

The year 1897 was marked in Victoria by the passing of the *Mines Act*, 1897, No. 1,514, 61 Vict., which came into operation on the 1st November of that year. It amends the *Mines Act*, 1890, No. 1120. Like the old Act, the new one consists of three parts : Part I deals with mining on Crown Lands ; Part II deals with mining on Private Property ; whilst Part III relates mainly to the regulation and inspection of mines and mining machinery. Several points in Part III are of interest.

Owing to the definition in the Victorian Act (Sec. 128), a mine " need not necessarily be restricted to underground excavations." Except in cases of emergency, no person can be employed below-ground in a mine for more than eight consecutive hours (Sec. 132). The ventilation rule (Sec. 357) of the *Mines Act*, 1890 (No. 1,120), was identical with the ventilation rule of the British Metalliferous Act (35 and 36 Vict. c. 77, Section 23 (1)). This evidently was found insufficient in practice, and the new rule (Sec. 135) is far more explicit, for it requires at least 100 cubic feet of air per minute for each person employed. The managers of mines are not certificated, but an engine-driver may not be employed unless he holds a certificate of competency, granted by a Board of Examiners.

Western Australia.*

The marvellously rapid growth of the gold mining industry, bids fair before long to make Western Australia our premier gold producing colony. The output for 1897 was 631,260 ozs., and was far more than double that of the preceding year. The returns which are now telegraphed from the colony show that the increase still continues. The out-crop for the current year will certainly exceed a million ounces. Most of the precious metal is derived from veins, and 415,424 tons of ore treated, gave the very high average of 1 oz. 8 dwts. 4 grains per ton.

The goldfields are by no means confined to one part of the colony ; however, East Coolgardie throws all the others into the shade, as it produced in 1897 nearly one-half of the total output of the colony.

Among other minerals, coal and the ores of copper and tin have been worked to a small extent. Several large coal-bearing districts have been discovered, the most important at present is the Collie coalfield, which appears to be of the same geological age as the Newcastle coalfield in New South Wales.

TABLE 351.

PERSONS EMPLOYED at GOLD MINES during the Years 1896 and 1897.

	Year.				Number of Persons Employed.
	1896	...	...	...
	1896	...	...	...	20,236
	1897	...	...	...	17,903

* Reports of the Department of Mines of Western Australia for the Years 1896 and 1897. Perth 1897 and 1898.

WESTERN AUSTRALIA—*continued.*

TABLE 352.

QUANTITY and VALUE of the MINERALS produced during the Years 1896 and 1897.

Mineral.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper (exported)	6	6	100	86	87	1,033
Gold	ozs. 270,562	kilos. 8,451	1,028,110	ozs. 631,260	kilos. 19,634	2,398,790
Mica (exported)	—	—	—	—	—	209
Tin "	137	139	4,338	95½	97	3,275
Total value	—	—	1,032,548	—	—	2,403,307

TABLE 353.

DEATHS from ACCIDENTS at GOLD MINES during the Years 1896 and 1897.

1896.		1897.	
Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
18	·89	27	1·51

West Indies. (*See* BARBADOS, REDONDA, TRINIDAD.)

Zululand. (*See* NATAL.)

FOREIGN COUNTRIES.

Algeria.

The two principal minerals raised in Algeria are iron ore and phosphate of lime. A considerable quantity of limestone is quarried, and the workings for salt and zinc ore are of some importance.

Iron Ore.—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by mines belonging to the Mokta-el-Hadid Company in the Departments of Constantine and Oran.

Phosphate of Lime.—The quarries of phosphate of lime at Tébessa in the Province of Constantine are now of great importance, for the value of their yield approached that of the total output of iron ore.

Salt.—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

Zinc Ore.—The output of zinc ore in Algeria is increasing gradually.

TABLE 354.

PERSONS EMPLOYED during the Years 1895 and 1896.*

Year.	At Mines.	At Underground Quarries.	At Open Quarries.
1895	1,317	502	1,481
1896	1,426	533	1,589

TABLE 355.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1895 and 1896.†

Mineral.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore	307	36,825	658	94,785
Iron ore	318,416	2,519,728	374,476	2,689,680
Lead ore, argentiferous	178	14,793	117	10,944
Quicksilver ore... ..	86	31,050	8	2,504
Rock salt and salt from brine ...	25,758	514,951	19,658	425,606
Zinc ore	14,302	470,782	17,587	843,840
Total Value in Francs ...	—	3,588,129	—	4,067,359
„ „ £ sterling ...	—	143,525	—	157,357

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1895*, pp. 54 and 69, and for 1896, pp. 66 and 69.

† *Ibidem*, 1895, p. 34, and for 1896, p. 37.

ALGERIA—*continued.*

TABLE 356.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1895 and 1896.*

Mineral.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Cement	—	—	60	1,500
Clay	—	—	48,297	212,630
Flags	26,500	100,000	166	2,140
Gypsum	2,800	6,240	300	690
Limestone	31,890	794,240	29,450	782,400
Marble	1,112	161,240	900	130,500
Millstones	—	—	100	880
Onyx... ..	1,764	661,500	370	127,650
Plaster	34,136	659,890	29,870	570,615
Phosphate of lime	157,886	3,171,615	165,738	2,504,523
Sand and gravel	20,400	12,000	41,400	41,400
Stone for building	5,923	130,500	9,228	153,000
" (rough and broken)	657,291	1,180,538	820,310	1,414,000
Total Value in Francs ...	—	6,877,763	—	5,941,928
" " £ sterling ...	—	275,110	—	237,677

TABLE 357.

DEATHS from ACCIDENTS during the Years 1895 and 1896.†

Kind of Working.	1895.		1896.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines... ..	5	3.85	7	4.91
Underground Quarries	3	5.98	1	1.88
Open Quarries	2	1.35	9	5.66
Total	10	3.05	17	4.79

Annam.‡

Coal, copper, gold, and silver are found in Annam. The coal mines at Nong-Son, near Tourane, do not appear to be in work at the present time, though the fuel they produce is said to be equal to that of Tong-King.

Many old workings shew that copper ore and gold quartz were largely worked in former days by the Annamites, as well as by the Kiams, a race which occupied the country before the Annamites conquered it.

* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1895, Carrières*, pp. 98-107, and for 1896, p. 65.

† *Ibidem*, 1895, p. 62, and for 1896, p. 74.

‡ Bel, "Aperçu sur les gîtes minéraux de l'Indo Chine Centrale connus en 1897." *Bulletin de la Société de l'Industrie Minière*. Vol. XII., 1898, p. 404.

Arabia.

The Arab is not a miner by nature, and there is little or no working for minerals on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

Argentine Republic.

All writers seem to agree that the mineral resources of the Argentine Republic are great;* little, however, has been done to develop them, for it is estimated that the total value of the mineral output of this large country does not exceed 300,000*l.* a year. In addition to the ores of copper, gold, iron, lead, mercury, nickel, and silver, the Republic can produce asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur. As railways are extended to the Andes, bringing facilities for working, the mining industry is sure to progress rapidly.

It appears that for economic reasons the general inspection of the mines of this country has been temporarily suspended, consequently the National Department of Mines and Geology at Buenos Aires is unable to supply any statistics.

TABLE 358.

QUANTITY and VALUE of GOLD and SILVER produced during the Years 1895† and 1896.†

Metal.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
Copper‡ ...	—	£ —	Metric Tons. 390	£ 18,330§
Gold	Kilos. 474	64,726	Kilos. 473	64,682
Silver	Kilos. 10,207	97,585||	Kilos. 10,210	87,125||

Aruba. (See DUTCH WEST INDIES.)

Austria-Hungary.

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by Austria, though not forming part of the empire.

Among the famous mines of the Austro-Hungarian empire may be mentioned the workings for gold and silver in Hungary and Transylvania, iron in Styria, lead and silver at Przibram in Bohemia, quicksilver in Carniola; salt is obtained in the Austrian Alps and in Galicia, which is likewise remarkable for its petroleum and ozokerite. The bulk of the brown coal comes from Bohemia, which also is the largest producer of ordinary coal, though followed closely by Silesia.

* - "Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Proc. Inst., C.E.*, Vol. CXXVIII., 1896-7, Part II.

† - *Report of the Director of the United States Mint for 1896 and 1897.*

‡ - *The Mining Journal*, Vol. LXVII., 1896, p. 254.

§ - Value of foreign copper in London market.

|| - Quining value of fine silver.

AUSTRIA-HUNGARY—*continued.*

TABLE 359.

AUSTRIA.

PERSONS EMPLOYED at MINES, arranged according to PROVINCE in which Employed, during the Years 1896* and 1897.

Province.	Persons Employed.			
	1896.		1897.	
	Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower	621	0.52		
" Upper	1,506	1.26		
Bohemia	55,971	46.74		
Bukowina	98	0.08		
Carinthia	3,765	3.14		
Carniola	2,372	1.98		
Dalmatia	245	0.21		
Galicia	4,551	3.80		
Görz and Gradisca	26	0.02		
Istria	814	0.68		
Moravia	9,899	8.27		
Salzburg	563	0.47		
Silesia... ..	24,175	20.19		
Styria	14,043	11.73		
Tirol	1,092	0.91		
Vorarlberg	1	0.00		
Total	119,742	100.00	124,394	100.00

TABLE 360.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1896† and 1897.‡

Year.	Coal.						Brown Coal.						Iron Ore.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.
1896 ..	144	48,793	3,213	3,916	4	55,926	263	42,536	2,163	1,274	3	45,976	37	4,629	27	173	—	4,829
1897 ..	138	50,904	3,228	3,933	2	58,067	280	44,771	2,148	1,161	4	48,084	37	4,962	71	236	—	5,269

TABLE 360—*continued.*†

Year.	Other Mines.						All the Mines.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	General Total.
1896	107	11,630	927	451	3	13,011	551	107,588	6,330	5,814	10	119,742
1897						12,974						124,394

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1896, Vienna, Part II., No. 2, p. 116.

† Do. do. do. 1896, do. No. 2, pp. 118—121.

‡ Do. do. do. 1897, do. No. 1, pp. 55, 129, 147, and 164.

AUSTRIA—continued.

TABLE 361.

PERSONS EMPLOYED at SALT MINES and WORKS during the Years 1896* and 1897.†

Country or Province.	Salt Mines.			Brine Evaporating Works and Sea-Salt Works.					Total at Salt Mines and Works.				
	Men.	Young Persons.	Total.	Men.	Women.	Young Persons.	Children.	Total.	Men.	Women.	Young Persons.	Children.	Total.
Upper Austria ..									1,206	19	—	—	1,224
Salzburg									356	2	1	—	359
Bukowina									63	—	—	—	63
Styria									426	3	—	—	429
Tyrol									249	—	—	—	249
Dalmatia									1,494	457	—	138	2,089
Istria									877	580	408	180	2,025
Galicia									1,964	—	—	—	1,964
Totals for 1897 ..									6,634	1,061	409	268	8,402
Totals for 1896 ..	2,229	—	2,229	4,104	840	433	277	5,654	6,333	840	433	277	7,883

TABLE 362.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1896† and 1897.

Province.	Kind of Workings.	1896.				1897.			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
Galicia ...	Ozokerite ...	5,463	226	—	5,689				
„ ..	Petroleum ...	4,517	5	—	4,522				

TABLE 363.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1896 and 1897.§

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Florins.	Metric Tons.	Florins.
Alum shale and vitriol ore ...	25,184	20,086	21,585	17,945
Antimony ore	905	80,630	864	73,449
Asphalt	390	11,342	300	8,868
Bismuth ore	—	—	1	1,200
Brown coal	18,882,536	36,227,608	20,458,092	40,084,423
Coal	9,899,522	35,254,925	10,492,771	38,404,864
Copper ore	6,823	273,269	7,405	279,393
Gold ore	416	48,412	647||	32,938
Graphite	35,972	1,216,458	38,504	1,352,646

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1896, Vienna, Part II., No. 2, p. 129.

† Do. do. do. 1897, do. No. 1, pp. 178 and 179.

‡ Do. do. 1896, do. No. 2, pp. 225 and 226.

§ Do. do. 1897, do. No. 1, pp. 166-169.

|| 68 kilos. of fine gold were obtained at the Metallurgical Works in 1897.

AUSTRIA—continued.

TABLE 363—continued.

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Florins.	Metric Tons.	Florins.
Iron ore	1,448,615	3,446,479	1,613,876	3,766,048
Lead ore	14,563	1,058,564	14,145	1,161,899
Manganese ore	3,950	34,282	6,012	47,961
Quicksilver ore	83,304	778,455	88,238	814,059
Silver ore	18,701	1,921,533	20,628*	1,871,801
Sulphur ore	643	8,271	529	4,837
Tin ore	15	2,473	16	2,422
Tungsten ore	22	6,980	31	19,248
Uranium ore	30	28,435	44	45,011
Zinc ore	26,887	474,033	27,463	530,141
Total value in florins ...	—	Fls. 80,892,235	—	Fls. 88,519,153
" " £ sterling ...	—	£6,741,019	—	£7,376,596

TABLE 364.

QUANTITY and VALUE of SALT produced during the Years 1896 and 1897.†

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Florins.
Upper Austria	205	70,935	—	10,089	7,446,837
Salzburg	—	21,670	—	528	2,079,014
Bukowina	1,294	2,632	—	—	346,821
Styria... ..	828	14,776	—	3,899	1,718,532
Tyrol	16	13,699	—	1,255	1,159,368
Dalmatia	—	—	7,033	—	328,323
Istria	—	—	38,329	—	3,602,907
Galicia	42,928	49,356	—	51,610	8,879,639
Total for 1897 ...	45,271	173,068	45,362	67,381	Fls. 25,561,441
" 1896 ...	41,939	174,803	23,678	68,513	£2,130,120 Fls. 22,985,353 £1,915,446

TABLE 365.

QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1896† and 1897.

Province.	Mineral.	1896.		1897.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Florins.	Metric Tons.	Florins.
Galicia	Ozokerite	6,572	1,776,853		
"	Petroleum	262,356	5,188,855		
	Total value in Florins	—	Fls. 6,965,708		
	" £ sterling	—	£580,475		

* 40,025 kilos. of fine silver were obtained at the Metallurgical Works in 1897.

† Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1897, Vienna, Part II., No. 1, p. 179.

‡ Do. do. do. 1896, do. Part II., No. 2, pp. 225 and 226.

AUSTRIA—continued.

TABLE 366.

ACCIDENTS at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1895 and 1896.*

Kind of Mines	1896.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
Coal (bituminous)	67	249	1·20	147,754
Brown coal	99	441	2·15	190,732
Iron ore	8	21	1·66	181,077
Other mines (excluding salt and ozokerite, and petroleum wells).	15	39	1·15	14,520
Total for 1896	189	750	1·58	161,325
„ previous year	203	683	1·73	146,249

TABLE 367.

ACCIDENTS at SALT MINES during the Years 1895 and 1896.†

Year.	Number of Deaths from Accidents.	Number of Persons injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
1895	—	9	—	—
1896	—	6	—	—

TABLE 368.

ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS during the Years 1895 and 1896.†

Kind of Workings.	1895.			1896.		
	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.
Ozokerite	29	34	5·95	11	21	1·93
Petroleum	8	14	1·85	4	16	·88

The accidents have been classified according to mineral worked, place, and cause.

* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums* for 1896, Vienna, Part II., No. 2, p. 141.
 do. do. do. do. do. p. 155.
 do. do. do. do. do. pp. 236-238.

AUSTRIA—continued.

TABLE 369.

DEATHS classified according to the MINERAL worked, and the PLACE of the ACCIDENT, during the Years 1895 and 1896.*

Place of Accident.	Coal.	Brown Coal.	Iron Ore.	Rock Salt.	Other Minerals.	Total.
In perpendicular shafts ...	10	10	—	—	5	25
On inclined planes ...	3	6	—	—	—	9
In levels ...	24	19	3	—	3	49
At the working face ...	20	44	1	—	7	72
Above ground ...	10	20	4	—	—	34
Total for 1896 ...	67	99	8	—	15	189
„ previous year ...	107	80	8	—	8	203

TABLE 370.

DEATHS from ACCIDENTS, arranged according to MINERAL worked and PLACE where they happened, during the Years 1895 and 1896.†

Kind of Mines.	Percentage of Deaths.					
	Perpendicular Shafts.	Inclined Planes.	Underground Roadways.	At the Working Face.	Above-ground.	Total.
Coal ...	5.29	1.59	12.70	10.58	5.29	35.45
Brown coal ...	5.29	3.18	10.05	23.28	10.58	52.38
Iron ...	—	—	1.59	0.53	2.11	4.23
Rock salt ...	—	—	—	—	—	—
Other mines ...	2.65	—	1.59	3.70	—	7.94
Total for 1895 ...	13.23	4.77	25.93	38.09	17.98	100.00
„ previous year ...	12.32	5.42	37.93	31.03	13.30	100.00

TABLE 371.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORKINGS for OZOKERITE and PETROLEUM) during the Years 1895 and 1896.†

Cause of Accident.	Number of Persons killed.		Increase or Decrease.
	1895.	1896.	
By falls of roof ...	45	30	— 15
„ haulage or winding appliances ...	20	23	+ 3
„ stones or things falling down ...	29	47	+ 18
„ machines or tools ...	3	8	+ 5
„ falling down ...	20	23	+ 3
„ firedamp ...	52	—	— 52
„ suffocation ...	3	25	+ 22
During descent or ascent ...	8	8	=
By travelling in cage or climbing ladders ...	6	6	=
„ blasting ...	4	7	+ 3
While undercutting (holing) ...	4	1	— 3
„ timbering ...	—	6	+ 6
By irruption of water ...	3	—	— 3
„ other causes ...	6	5	— 1
Total ...	203	189	— 14

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1896, Vienna, Part II., No. 2, p. 149.
† Do. do. do. do. do. p. 142.

AUSTRIA—continued.

The above tables show that in the mines of Austria proper (exclusive of workings for ozokerite and petroleum) there were 189 deaths from accidents, or 14 less than in 1895.* The worst mining accident of the year was the fire at Hermenegild shaft in Polnisch-Ostrau; the timbering took fire in some unexplained manner, and 16 persons were suffocated, whilst 18 others were seriously injured.†

The Austrian statistical volume‡ contains a succinct account of the 17 fire-damp explosions in 1896, by which 2 workmen were killed, 21 seriously injured, and 7 slightly hurt. Of the 17 separate accidents, five took place at coal mines, six at brown coal mines, and six at workings for petroleum or ozokerite. The causes are indicated by the following table. The two deaths happened at an ozokerite mine.

TABLE 372.

Separate EXPLOSIONS of FIREDAMP arranged according to kind of MINES or other MINERAL WORKINGS and cause of ACCIDENT during the Year 1896.§

Cause.	Coal Mines.	Brown Coal Mines.	Ozokerite and Petroleum Workings.	Total.
Naked lights	4	5	—	9
Matches	—	—	—	—
Ignition of benzine from lamp being over-filled.	1	—	—	1
Gauze of safety lamp being sprinkled with petroleum.	—	—	2	2
Shot-firing	—	—	—	—
Ignition of spouting oil from boiler fire.	—	—	1	1
Unknown	—	1	3	4
Total for 1896	5	6	6	17
Total for previous year ...	6	4	6	16

The accidents at the ozokerite and petroleum workings are classified separately as follows :—

TABLE 373.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE and PETROLEUM WORKINGS, classified according to the PLACE where the ACCIDENT happened, during the Year 1896.||

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts	8	8
In levels	—	3
At the working face	3	6
On surface	4	20
Total for 1896	15	37
„ previous year...	37	48

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1896, Vienna, Part II., No. 2, p. 142.

† Do. do. do. do. do. p. 135.

‡ Do. do. do. do. do. p. 243.

§ Do. do. do. do. do. pp. 246 and 247.

|| Do. do. do. do. do. pp. 236-238.

BOHEMIA.

Bohemia employs such a large proportion of the miners in Austria, details of this province have been extracted from the official reports.

TABLE 374.

EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1895 and 1896.*

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
... ..	16,940	1,082	1,517	4	19,543	34.92
... ..	26,925	957	681	—	28,563	51.03
... ..	1,385	—	58	—	1,443	2.58
... ..	6,197	125	100	—	6,422	11.47
Total for 1896	51,447	2,164	2,356	4	55,971	100.00
1895	50,638	2,203	2,177	1	55,019	100.00

TABLE 375.

DEATHS at MINES during the Year 1896.†

Kind of Mines.	Number of Deaths from Accidents.	Average Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral produced per Death by Accident.
Coal	19	.97	205,896
Brown coal	68	2.38	226,275
Iron ore	2	1.39	253,194
Other mines	8	1.24	9,227
Total for 1896...	97	1.73	204,937
„ previous year	89	1.62	217,459

TABLE 376.

HUNGARY.

PERSONS EMPLOYED at all MINES, (including SALT MINES), and SMELTING WORKS, during the Years 1896‡ and 1897.§

Year.	Men.	Women.	Children.	Total.
1896	61,950	1,683	6,695	70,328
1897	56,790	2,374	5,126	64,280

Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1896, Vienna, Part II., No. 2, p. 90.
 Do. do. 1895, do. pp. 134 and 135. Also included
 in Austria in table on page 366.
Ungarisches Statistisches Jahrbuch, Neue Folge IV., 1896, Budapest, p. 166.
 Official Return furnished by the Central Statistical Office, Budapest.

HUNGARY—continued.

TABLE 377.

QUANTITY and VALUE of MINERALS and METALS produced in 1896* and 1897.†

Mineral, Metal, or Product.	1896.		1897.	
	Quantity.	Value, Unit = 1,000 Fl.	Quantity.	Value, Unit = 1,000 Fl.
	Metric Tons.		Metric Tons.	
Alum shale	—	—	60	0·6
Antimony ore	1,361	55·7	1,800	85·3
Antimony, crude, and regulus	500	146·4	523	156·4
Argentiferous copper ore	—	—	—	—
Argentiferous and mercurial copper ore.	—	—	—	—
Asphalt	2,740	142·2	3,057	160·1
Auriferous and argentiferous lead and copper ore.	89,609	1,049·7	97,702	1,163·2
Auriferous silver ore	1,346	144·5	1,685	185·0
Bismuth ore	112	20·0	141	27·9
Briquettes	31,179	247·3	27,022	216·2
Brown coal	3,761,728	12,573·1	3,870,530	12,541·0
Coal	1,132,625	5,845·8	1,118,025	6,034·5
Copper ore	8	0·2	365	4·4
Copper vitriol	3	0·7	6	1·5
Gold ore (washed)	6,478§	433·4	6,419	418·5
Iron ore	1,269,680	3,023·9	1,421,129	3,778·3
Iron pyrites	52,697	226·4	44,454	176·4
Iron vitriol	595	2·4	592	2·9
Lead ore... ..	4,180	299·0	3,928	330·2
Manganese ore	2,100	3·3	3,976	10·0
Nickel and cobalt ore	46	4·5	32	3·1
Nickel and cobalt speiss	18	7·3	8	2·4
Petroleum	2,168	54·0	2,299	56·5
Quicksilver ore... ..	8	0·2	7	0·1
Salt	180,133	15,281·0	171,711	13,267·0
Silver ore	1,854‡	135·1	2,604	157·0
Sulphur	138	9·3	112	8·2
Total value in Florins	—	Fl. 39,705·4	—	Fl. 38,786·7
„ „ £ sterling	—	£3,308,783	—	£3,232,225

TABLE 378.

DEATHS at all MINES (including SALT MINES and SMELTING WORKS) during the Years 1896† and 1897.‡

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.
1896	155	237	2·20
1897	81	203	1·26
Comparison between 1896 and 1897	—74	—34	—·94

* *Ungarisches Statistisches Jahrbuch, Neue Folge* IV., 1896, Budapest, pp. 171, 172 and 177.

† Do. do. do. do. pp. 170 and 171.

‡ Official Return furnished by the Central Statistical Office, Budapest.

§ 3,209 kilos. of fine gold were obtained at the Metallurgical Works in 1896.

‡ 19,916 Do. silver do. do. do. do.

BOSNIA AND HERZEGOVINA.*

Judging by the number of persons employed, mining is an industry of little moment in Bosnia and Herzegovina at the present day, though Rücker† predicts for it an important future. In Roman and pre-Roman times much gold was extracted in Bosnia from alluvial deposits. This country is said to be rich in iron ore, coal, and salt.

TABLE 379.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1896 and 1897.

Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.
1896	838	163	355	227
1897	807	142	346	199

TABLE 379A.

QUANTITY and VALUE of MINERAL produced during the Years 1896 and 1897.

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Florins.	Metric Tons.	Florins.
Brown coal	222,724	469,674	229,643	489,369
Chrome ore	443	13,566	396	13,870
Copper ore	4,586	40,704	3,527	24,860
Iron ore	23,213	49,613	37,095	79,086
Iron pyrites	2,000	10,000	3,670	18,351
Manganese ore	6,821	112,548	5,344	84,429
Petroleum ... (hectolitres)	20	60	—	—
Salt (Brine)	1,291,933‡	51,677	1,138,420§	45,536
Total value in Florins	—	747,842	—	755,501
„ £ sterling	—	62,320	—	62,958

TABLE 380.

DEATHS at MINES during the Years 1896 and 1897.

Year.	Under-ground.			Above-ground.			Total Below and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1896	1	—	1	—	—	—	1	0.74
1897	—	—	—	—	—	—	—	—

* Statistics prepared by the "Bosnisches Bureau, Montan-Abtheilung," published in "Oesterreichische Zeitschrift für Berg- und Hüttenwesen," XLVI. Jahrgang, 1898, pp. 302 and 303.

† *Einiges über das Goldvorkommen in Bosnien.* By A. Rücker, Vienna, 1896.

‡ Containing 13,719 tons of salt.

§ " 12,089 " "

District.

	Mean useful thick.	At the Face.	Others.	Total.	Of all Class.	General T.	Of Pers. Under Face.	Of Pers. From Brn.	Days	T.										
Mons ...	Metre. 53	6,138	16,348	22,526	6,859	29,385	27	77	283	6,072,260	949	3.49	4,346,680	708	265	193				
Centre ...	63	3,471	10,160	13,631	4,888	18,514	25	74	296	4,137,750	1,192	4.08	3,376,970	973	332	248	692	182	3.29	1.12
Charleroi ...	75	7,043	20,657	27,700	12,109	39,809	25	70	299	8,016,500	1,138	3.81	7,599,150	1,093	372	278	636	191	3.66	1.24
Namur ...	77	596	1,470	2,066	881	2,947	29	70	300	543,530	912	3.04	533,580	895	363	258	606	181	2.98	1.21
Liège ...	69	4,950	17,468	22,418	7,309	29,727	22	75	305	6,045,756	1,221	4.00	5,536,056	1,118	311	247	757	186	3.67	1.02
Totals and Averages for 1897	66	22,198	66,143	88,341	32,041	120,382	25	73	296	24,815,796	1,113	3.76	21,492,446	968	325	243	671	179	3.27	1.10
" 1896	66	21,876	65,704	87,580	31,666	119,246	25	74	299	24,849,130	1,136	3.80	21,252,370	971	323	243	671	178	3.25	1.08

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* Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à vapeur, pour l'année 1897, Brussels, 1898, pp. 10 and 11.

Banca and Billiton. (See DUTCH EAST INDIES.)

Bavaria. (See GERMAN EMPIRE.)

Belgium.

The workings for mineral in Belgium are classified in the official statistics under three heads: (1) Coal Mines; (2) Ore Mines; (3) Quarries. The following table shows that coal mining is by far the most important of the mineral industries of the country.

TABLE 381.

PERSONS EMPLOYED.*

Kind of Workings.	1896.			1897.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal Mines	87,580	31,666	119,246	88,341	32,041	120,382
Ore Mines... ..	912	1,105	2,017	855	1,079	1,934
Quarries (Open and Under-ground)	2,255	30,346	32,601	2,255	30,346	32,601
Total	90,747	63,117	153,864	91,451	63,466	154,917

From the next table we learn that women and girls are still employed below-ground in the Belgian collieries, though their number is decreasing on account of the law of 15th March, 1893. Without interfering with females already at work, this law prohibits their employment below-ground before the age of 21. Its result will probably be the entire disappearance of female labour below-ground before long, because by the time a woman is 21 she has already taken up some trade or is married, and has not acquired a liking for mining.†

TABLE 382.

PERSONS EMPLOYED at COAL MINES during the Years 1896 and 1897.‡

Year.	Under-ground.							Above-ground.							Total Under-ground and Above-ground.
	Males.			Females.			Total.	Males.			Females.			Total.	
	Ages.			Ages.				Ages.			Ages.				
	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.		12 to 14.	14 to 16.	Above 16.	12 to 16.	16 to 21.	Above 21.		
1896...	1,552	4,229	80,911	—	291	597	87,580	1,044	1,524	21,376	2,434	3,768	1,520	31,666	119,246
1897...	1,804	4,223	81,678	—	87	549	88,341	1,147	1,384	21,536	2,646	3,774	1,554	32,041	120,382

Information of a very useful character is contained in a table prepared annually by the Belgian Mining Department. The average output per underground worker was only 243 tons in the year 1897, compared with 377 in this country; the reason of this is the small size of the seams, which on an average are only 2 feet 2 inches (66 c.m.) thick.

* *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1897*, Brussels, *Ibidem*, 1898, pp. 7, 21, and 26.

† Kuborn "De l'exploitation des Mines en Belgique," *Rapport lu au V^e Congrès international d'Hydrologie Médicale, de Climatologie et de Géologie de Liège*.—1898.

‡ *Statistique, &c., pour l'année 1897*, p. 7.

BELGIUM—continued.

TABLE 383.

COAL MINES.

THICKNESS OF COAL SEAMS, NUMBER OF PERSONS EMPLOYED, and OUTPUT per PERSON in each District during the Year 1897, and Totals for the previous Year.*

District.	Mean useful thickness of Coal Seam.	Number of Persons Employed.					Ratios.		Days worked.	Number of Square Metres of Seam laid bare.				Annual Output. (Metric Tons.)						Daily Output. (Metric Tons.)				
		Underground.		Above-ground.	General Total.	Of Persons Employed at the Face to those Employed Underground.	Of Persons Employed Underground to Total Number Employed.	In the Year.		Per Year.	Per Day.	Per District.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Underground and Above-ground.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Above and Under-ground.		
		At the Face.	Others.																				Total.	Of all Classes.
Mons	Metre. '53	6,138	16,388	22,526	6,859	29,385	'27	'77	283	6,072,260	989	3.49	4,346,680	708	265	193	634	148	2.50	'94	'68	2.24	'52	
Centre	'63	3,471	10,160	13,631	4,883	18,514	'25	'74	296	4,137,750	1,192	4.03	3,576,970	973	332	248	692	182	3.29	1.12	'84	2.34	'61	
Charleroi	'75	7,043	20,657	27,700	12,109	39,809	'25	'70	299	8,016,500	1,138	3.81	7,699,150	1,093	372	278	636	191	3.66	1.24	'93	2.13	'64	
Namur	'77	596	1,470	2,066	881	2,947	'29	'70	300	543,530	912	3.04	533,580	895	363	258	606	181	2.98	1.21	'86	2.02	'60	
Liège	'69	4,950	17,468	22,418	7,309	29,727	'22	'75	305	6,045,756	1,221	4.00	5,536,056	1,118	311	247	757	186	3.67	1.02	'81	2.48	'61	
Totals and Averages for 1897		22,198	66,143	88,341	32,041	120,382	'25	'73	296	24,815,796	1,113	3.76	21,492,446	968	325	243	671	179	3.27	1.10	'82	2.27	'60	
" 1896	'66	21,876	65,704	87,580	31,666	119,246	'25	'74	299	24,849,130	1,136	3.80	21,252,370	971	323	243	671	178	3.25	1.08	'81	2.24	'60	

* Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à vapeur, pour l'année 1897, Brussels, 1898, pp. 10 and 11.

BELGIUM—continued.

TABLE 384.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES* for the Years 1896 and 1897.†

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
		Francs.		Francs.
Barytes <i>Metric Tons</i>	25,000	175,000	23,000	161,000
Clay "	83,020	422,500	270,715	1,799,760
Coal "	21,252,370	202,010,100	21,492,446	220,672,100
Felspar <i>Cubic Metres</i>	2,000	16,000	1,100	9,700
Flint for earthenware "	23,450	95,800	23,050	88,600
Iron ore <i>Metric Tons</i>	307,031	1,417,820	240,774	1,264,510
Lead ore "	70	8,050	108	16,150
Manganese ore "	23,265	345,020	28,372	342,700
Marl and chalk <i>Cubic Metres</i>	191,100	332,000	204,600	453,400
Ochre and other colours "	700	14,000	350	7,250
Phosphate of lime "	297,470	2,686,600	350,560	2,183,810
Porcelain earth "	130,960	1,067,800	—	—
Pyrates <i>Metric Tons</i>	2,560	26,850	1,828	19,950
Sand <i>Cubic Metres</i>	418,720	814,800	559,141	1,185,980
Slate <i>Number</i>	35,980,000	1,322,500	41,422,000	1,654,300
Stone :—	<i>Cubic Metres</i>	1,150	25,000	24,600
Building stone dressed "	152,420	13,711,500	181,746	15,384,620
Conglomerate "	160	20,000	220	27,500
Flags <i>Square Metres</i>	131,400	458,600	107,572	358,230
Gravel and broken stone. } <i>Cubic Metres</i>	244,050	615,700	235,495	554,095
Hone stones and scythe stones. } <i>Number</i>	45,850	34,100	43,150	83,700
Limestone <i>Cubic Metres</i>	186,400	412,800	278,020	514,965
Marble "	16,315	2,723,400	17,797	2,359,770
Paving stone <i>Number</i>	102,295,950	8,968,600	95,542,700	8,699,375
Rough stone, broken stone, and lime. } <i>Cubic Metres</i>	2,646,305	10,717,500	3,010,877	13,653,651
Zinc ore <i>Metric Tons</i>	11,630	601,250	10,954	578,050
Total value in Francs	—	249,043,290	—	272,097,766
" " £ sterling	—	9,961,732	—	10,883,910

TABLE 385.

NUMBER of DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1896 and 1897.‡

Year.	Kind of Workings.	Below-ground.	Above-ground.	Total.	Number of Deaths per 1,000 Persons Employed.		
					Below-ground.	Above-ground.	Total.
1896	Coal mines	121	15	136	1·38	·47	1·14
"	Ore mines	—	—	—	—	—	—
"	Underground quarries... ..	4	—	4	1·77	—	·92
	Total	125	15	140	1·38	·43	1·11
1897	Coal mines	116	8	124	1·31	·25	1·03
"	Ore mines	2	—	2	2·34	—	1·03
"	Underground quarries... ..	3	—	3	1·33	—	·69
	Total	121	8	129	1·32	·23	1·02

* Excluding the two Flanders and the Province of Antwerp, which only furnish Tertiary clays for making bricks and tiles, and sand used in making glass and for other purposes.

† *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année, 1897, Brussels. 1898, pp. 15, 22, 25, and 26.*

‡ *Ibidem*, pour l'année, 1896, pp. 46, 48, and 49, et pour l'année, 1897, pp. 44 and 47.

§ These death-rates are calculated on the number of persons employed at underground quarries in 1896.

BELGIUM—continued.

The average death-rate for underground workers in Belgium during the ten years 1888–1897 was 1·90 per 1,000.

A useful account of the diseases of miners in Belgium is given by Professor Kuborn.* He is able to report that not only are the accidents far less frequent than they were formerly, but also that the health of the workmen has greatly improved. Anæmia, which was formerly the rule among miners, is now very exceptional. Cases of ankylostomiasis are far from rare in the neighbourhood of Liège, and the parasite was probably originally introduced by Piedmontese miners, who had worked in the St. Gothard Tunnel. Pulmonary tuberculosis continues to be exceptional among the colliers. Heart disease, caused by excessive ladder climbing, has become almost a thing of the past owing to the introduction of cages. Cardiac asthma, combined with emphysema or chronic bronchitis, is still common among miners, though to a lesser degree than it was formerly. Anthracosis, or the infiltration of carbonaceous matter into the lung tissue, is now exceptional. The characteristic diseases of the trade at the present time are muscular rheumatism and chronic bronchitis—these maladies are probably due to the rapid transitions from heat to cold in some of the strong ventilating currents, and to insufficient clothing when returning home in wet and cold weather, and are largely under the control of the individual. To these affections must be added gastric-catarrh, and even ulceration of the stomach, which are in no way due to the occupation itself; their cause must be sought in alcoholic excess, in other words gin drinking.

Kuborn shows that the average age at death of the Liège colliers has risen from 37½ years in the period 1863 to 1868 to 40½ years during the period 1875 to 1885.

Bohemia. (See AUSTRIA-HUNGARY.)

Bolivia.

Of all the countries in South America, Bolivia is the richest in silver. The exports of tin are considerable.

TABLE 386.

QUANTITY and VALUE of METALS produced during the Years 1896 and 1897.

Metal.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Copper†	2,032	94,467	2,235	107,892
Gold‡	Kilos. 1,128	154,004	§	—
Silver‡	Kilos. 466,649	3,982,320	§	—
Tin‡	3,890	240,078	§	—
Total value ...	—	4,470,869	—	—

NOTE.—The value of silver is the coining value of fine silver.

Bonaire. (See DUTCH WEST INDIES.)

* Kuborn "De l'exploitation des Mines en Belgique," *Rapport lu au Ve Congrès international d'Hydrologie Médicale, de Climatologie et de Géologie de Liège.*—1898. ‡

† H. B. Merton & Co.

‡ Report of the Director of the United States Mint for 1896.

§ Figures not yet available.

‡ The Mineral Industry, Vol. V., 1896, by R. P. Rothwell, New York and London, 1897.—Value calculated on the average price of "Straits" tin in the London market.

Borneo. (See BRITISH NORTH BORNEO and DUTCH EAST INDIES.)

Bosnia. (See AUSTRIA-HUNGARY.)

Brazil.

The principal mineral productions of Brazil are diamonds, gold, iron ore and manganese ore. The manganese mines are situated in the district of Miguel Burnier, in the State of Minas Geraes. Some coal is being worked. No official statistics appear to be published by the Brazilian Government.

TABLE 387.

QUANTITY and VALUE of GOLD produced during the Years 1896 and 1897.*

Metal.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
Gold	Metric Tons. Kilos. 1,805	£ 246,407	Metric Tons. †	£ —
Manganese ore ‡ ...	14,347	(not stated)	8,941	—

Bulgaria.§

TABLE 388.

NUMBER of PERSONS EMPLOYED at MINES during the Year 1894.

Below-ground.			Above-ground.			Total Above and Below Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
215	—	215	95	—	95	310

TABLE 389.

QUANTITY and VALUE of MINERAL produced during the Year 1894.

Mineral.	Quantity raised.	Value.
Lignite	Metric Tons. 57,340	£ 16,528

¶ The most important coal basins at present discovered are those of Mochino and Pernik, respectively 28 and 30 km. distant from Sophia. The coal is of Tertiary age. The colliery at Pernik is worked by the State, and is connected with the capital by a railway 32·8 km. in length.

* Report of the Director of the United States Mint for 1897.

† Figures not yet available.

‡ Coal and Iron Trades Review, p. 700, 29th April, 1898.

§ Official Return furnished by the Mining Department of the Bulgarian Ministry of Commerce and Agriculture. Later figures are not available.

¶ Berg-und hüt. Zeit., Vol. lv. 1896, p. 298.

Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinder, dug from the sides of volcanic cones, is utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England.

Limestone for local use is derived from Fuerteventura, and to a small extent from Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

Celebes (See DUTCH EAST INDIES).

Chili.

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Other important exports are : coal, copper, guano, gold and gold ore, iodine, manganese ore, and silver.

Coal.—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota. Still further South there is coal of Miocene age extending to the Straits of Magellan.*

Nitrate of Soda.†—In the year 1895 there were 74 saltpetre works in operation, which produced 1,313,193 metric tons of nitrate of soda and 1,731 kil. of iodine.‡ They afforded employment to 22,485 persons, of whom 16,257 were Chilians. The principal port at which the nitrate is shipped is Iquique.

TABLE 390.

QUANTITY and VALUE of MINERALS exported during the Years 1896 and 1897.§

Description of Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Borate of Calcium	7,486	374,294	3,154	283,770
Borax	—	—	14	2,860
Clay	40	600	20	998
Coal	204,858	1,434,253	243,968	1,869,310
Cobalt ore	—	—	6	312
" " specimens	—	700	—	20,300
Copper, metal	20,592	5,148,015	19,011	5,226,199
" regulus	2,528	284,897	2,519	251,915
" ore	6,159	307,943	3,396	169,810
Copper and Silver Ore	62	9,462	162	25,455
Copper, Gold, and Silver ore... ..	29	2,954	—	—
Copper, Gold, and Silver regulus	8	1,520	—	—
Copper and Silver regulus	1,052	210,329	164	32,904
Fireclay	—	—	8	82
Gold	Kilos. 1,061	849,036	Kilos. 1,132	905,168

* Gascoyne, "Coal-fields of Chili." *Trans. Inst. Min. Eng.*, Vol. xv., 1898, p. 237.

† Much information concerning the nitrate industry in Chili is contained in the report of the Fiscal Delegate to the Minister of Lands, in the *Memoria del Ministro de Hacienda presentada al Congreso Nacional en 1896*, p. 164. Santiago de Chile, 1896.

‡ *Op. cit.*, p. 189.

§ *Estadística Comercial de la Republica de Chile correspondiente al año de 1897*, Valparaiso, 1898 p. 415.

Chili—continued.

TABLE 390—continued.

Description of Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Gold ore... ..	367	73,475	63	28,535
Gold and Silver ores	636	127,228	260	46,631
Iodine	206	2,063,950	243	2,429,370
Iron ore... ..	—	—	5	256
Lead	—	—	324	62,111
„ Argentiferous	594	59,415	46	4,585
Lime	4	80	1	24
Manganese ore... ..	26,151	261,515	23,528	1,411,648
Nickel ore	—	—	1	60
Nitrate of Soda... ..	1,111,757	43,931,667	1,057,639	37,461,559
Phosphate of Lime	7,760	310,400	16	480
Silver	Kilos. 152,214	4,202,862	Kilos. 143,983	3,793,643
„ ore	2,906	1,676,655	1,167	772,293
„ regulus	—	—	739	47,716
Silver and Lead ores	1	83	6	636
Tin	—	—	345	25,883
Other Minerals... ..	15	1,500	—	—
Total Value in Dollars	—	61,332,833	—	54,874,513
„ „ „ £ sterling	—	9,711,032	—	8,688,465

China.*

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of copper, gold, iron, lead, quick-silver, silver, tin and zinc. Petroleum and sulphur are found in addition to the metallic ores in the south-west; whilst salt is specially abundant in Sze-chuan, in the extreme west, a province said to be highly favoured with other forms of mineral wealth.

Consul Jamieson,† while admitting the great mineral wealth of the province of Yunnan, is of opinion that the difficulties in the way of working are so formidable that capital cannot be profitably employed in mining enterprises, at least in the southern and western sections of the province.

No mineral statistics are published by the Chinese Government, but even if they did exist, the quantities of mineral wrought at the present time, which are comparatively small, would be no index to the enormous wealth of the country.

The Director of the United States Mint states that 4,550 kilos. of gold of the estimated value of £620,944 were produced in 1896.‡

Cochin China. (See INDO-CHINA.)

Colombia.§

Coal.—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

Copper.—Deposits are known to exist but they are unworked.

* "The salt wells of China." *Jour. Soc. Arts*, Vol. XLVI., 1898, p. 385.

Fearon and Allen.—"The Chinese, and recent industrial progress in China." *Eng. Mag.*, Vol. XVI., 1898, p. 166.

M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.

Jameson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 365.

Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV., 1898, p. 491.

† China, No. 3 (1898). *Consular Report on the trade of Yunnan*. [C.—9083] 1898.

‡ *Report of the Director of the United States Mint for 1896*, Washington, 1897.

§ Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898.

COLOMBIA—continued.

Emeralds.—The famous mines of Muzo have been worked continuously to obtain this gem for more than three centuries.

Gold.—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

*Manganese ore.**—This ore is worked about 40 miles east of Colon.

Salt.—Rock salt is mined near Bogota.

TABLE 391.

QUANTITY and VALUE of GOLD, MANGANESE ORE, and SILVER produced during the Years 1895 and 1896.

Mineral.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
Gold† Kilos.	4,353	£ 594,410	4,514	£ 616,017
Manganese ore Metric Tons	—	—	10,668‡	10,086
Silver† Kilos.	52,501	501,930§	52,511	448,131§
Total value ...	—	1,096,340	—	1,074,234

Congo Free State.

No particulars have been received.

Corea.||

Corea appears to be rich in minerals, especially in the province of Ping-Yang, where coal and gold are being worked. It is estimated that gold to the value of £300,000 is obtained annually in Corea.

Cuba.¶

The following minerals have been more or less constantly mined in Cuba :—

Asphalt and Petroleum.—These occur in various parts of the island.

Copper ore.—Copper ore has been mined on an extensive scale, particularly at Cobre, in the province of Santiago de Cuba.

Gold.—This metal is said to abound in the provinces of Santa Clara and Santiago.

Iron ore.—The latter province possesses extensive deposits of iron ore, and the Juragua mines have been successfully worked for some years. The exports in 1896 were 416,410 metric tons.

Manganese ore.—This ore is extremely abundant in the province of Santiago.

* *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.

† *Report of the Director of the United States Mint for 1897.*

‡ "Manganese Deposits of Panama," by E. J. Chibas, *Trans. Am. Inst. M.E.*, Feb. 1897.

§ Coining value of fine silver.

¶ *Consular Report on Corea. Foreign Office, 1897. Miscellaneous Series, No. 433.*

¶ Cabrera, "The Mineral Resources of Cuba." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 308.

Curaçao. (See DUTCH WEST INDIES.)

Denmark.

Bog iron ore exists in Jutland,* and in years gone by it was occasionally worked and smelted on a small scale.

GREENLAND.†

The quantity of cryolite obtained from Ivigtut during the year 1895 was 12,287 tons, and in 1896 only 6,058 tons, the falling off in the latter year being due to the state of the ice.

About 145 to 150 persons were employed during the summer months, and about 60 in winter.

No accidents occurred during the years 1895 or 1896.

Dutch East Indies.

BANCA.‡

The alluvial diggings of the Island of Banca still yield large quantities of tin ore.

TABLE 392.

Year.	Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons.
1893-94	10,428	119,513	7,352
1894-95	11,899	129,951	7,994
1895-96	12,453	169,198	10,408

The number of persons employed includes not only the actual diggers of the ore, but also the charcoal burners and the smelters.

BILLITON.§

Like Banca, its neighbour, Billiton is a large producer of tin ore.

TABLE 393.

Year.	Number of Mines at Work.	Average Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1893-94	89	8,120	78,595	4,835
1894-95	90	8,390	82,425	5,071
1895-96	89	8,690	94,923	5,839

* Glückauf, Vol. XXXIV., 1898, p. 872.

† Official Report furnished by the Danish Government.

‡ *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië* for 1897, Amsterdam, p. 17.

§ *Ibid.*, p. 27.

DUTCH EAST INDIES—continued.

BORNEO.*

Coal.—The mines of Mahakkam River at Kutei in South-Eastern Borneo produced 21,436 tons of coal in 1894 and 19,559 in 1895. Small quantities of coal were raised at Salimbau in Western Borneo.

Diamonds.—The estimated output of diamonds from Western Borneo was 2,500 carats in 1895 and 2,704 carats in 1894.

Gold.—The output of gold from the Western Division of Borneo was 2,075½ thail, or 80 kilograms, valued at fl. 26,500 in 1894, and 2,059 thail, or 79 kilograms, valued at fl. 28,240 in 1895, and in the various other divisions the total output was 2,059½ thail, or 79 kilograms, valued at fl. 28,247.

CELEBES.†

Gold is known to occur in various parts of Celebes, and several companies have lately been formed in Amsterdam for the purpose of exploring and working the deposits of the precious metal.

JAVA.‡

Among the mineral productions of Java may be named coal, gold, iodine, manganese ore, and petroleum.

798 tons of coal were produced from a mine in the Sedan district during the year 1895–6.

The natives, especially the women, obtain some gold by washing river sand in wooden bowls.

The Goenoeng Kendeng district has springs containing iodides in solution, from which 2,436 kil. of crude iodide of copper, valued at fl. 9,744, were manufactured in 1895, and 2,359 kil. in 1894.

Manganese ore is produced in the regencies of Pengasih and Nanggoelan.

Mineral oil occurs in various parts of the island, and is obtained on a large scale by borings.

SINGKEP.§

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

TABLE 394.

Year.	Number of Mines at Work.	Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1894–5 	12	1,288	12,679	780
1895–6 	12	1,265	16,110	991

About two-thirds of the persons were engaged at the tin diggings proper, and one-third in getting charcoal and smelting the ore.

* *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië* for 1897, Amsterdam, pp. 52, 78.

† *Ibid.*, p. 77.

‡ *Ibid.*, pp. 38, 58.

§ *Ibid.*, p. 35.

DUTCH EAST INDIES—*continued.*

SUMATRA.*

Coal and petroleum are the most important minerals produced in Sumatra at the present time. The Ombilien coalfield on the west coast of Sumatra has long been known. It is now being worked by the Dutch Government, though not on a very large scale.

TABLE 395.

Year.					Number of Persons Employed.	Quantity of Coal produced.
1894					1,096	Metric Tons. 72,452
1895					1,504	107,953
1896					1,362	119,080 (estimated)

Sumatra's principal petroleum wells are on the east coast at Langkat ; they yielded 1,334,249 cases (1 case=36 litres) of refined petroleum in 1895, as against 1,042,943 in 1894. The oil is exported to the Straits Settlements, Burmah, Siam, Cochin China, and elsewhere.

Dutch Guiana or Surinam.

The estimated quantity of gold produced in 1896 was 900 kilograms.† It was obtained almost exclusively from alluvial deposits.

Dutch West Indies.

Phosphate of lime has been worked in the island of Aruba ; salt is obtained by the natural evaporation of sea water in Bonaire, Curaçao, and St. Martin.

Ecuador.

It is said that gold abounds, though the yearly output is small. It is obtained from alluvial deposits.

TABLE 396.

QUANTITY and VALUE of GOLD and SILVER produced in 1895 and 1896.‡

1895.				1896.			
Gold.		Fine Silver.		Gold.		Fine Silver.	
Quantity.	Value.	Quantity.	Coining Value.	Quantity.	Value.	Quantity.	Coining Value.
Kilos. 103	£ 14,055	Kilos. 240	£ 2,300	Kilos. 200	£ 27,289	Kilos. 240	£ 2,053

* *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië* for 1897, Amsterdam, pp. 41, 66.

† *Foreign Office Report*, 1897, *Miscellaneous Series*, No. 422, p. 12.

‡ *Report of the Director of the United States Mint for 1897.*

Egypt.

Little or nothing is being done in the way of mining at the present day. Granite, porphyry, and limestone are quarried. The salt pans at Rowaiyeh, near Suakin, are again being worked; 36,000 tons of salt were produced in the year 1895, and much of this was shipped to Calcutta.*

Ethiopia.†

Ethiopia is known to possess deposits of coal, gold, iron ore, and salt. Pieces of rock salt, obtained in northern Ethiopia, serve as currency.

France.

Coal.—Coal mining is by far the most important mineral industry in France, for its collieries employ more persons than all the other mines and quarries put together. 59·5 per cent. of the coal obtained in France during the year 1897 was produced in the two departments of the Nord and the Pas-de-Calais. The mines of the important Anzin Company near Valenciennes yielded 2,971,000 tons, or 88,000 tons more than in the previous year, whilst the output of the Lens Company's collieries in the Pas-de-Calais reached 2,698,000 tons, or 160,000 tons more than in 1896. The increase in the production of these two departments continues, for the output of the first six months of the present year is half a million tons more than in the corresponding period of 1897.

The Loire district produced nearly $3\frac{3}{4}$ million tons, the Gard district nearly 2 millions, and the coalfields of Burgundy and the Nivernais together over 2 million tons.

The total quantity of brown coal produced during the year 1897 amounted to 460,422 tons, or an increase of 21,000 tons. The quantity of peat obtained in 1897 was less than in the previous year.

Iron ore.—92 per cent. of the iron ore raised in France is oolitic hydrated peroxide, which is principally obtained from mines and openworks near Nancy, Longwy, and Briey, in the department of Meurthe-et-Moselle. The iron-producing strata are at the top of the Liassic rocks, and are of the same geological age as those which are so largely worked in the adjoining territories of Lorraine and Luxemburg.

Iron pyrites.—Nearly all the iron pyrites is the produce of the Sain-Bel mines (Rhône).

Lead ore.—The principal lead mine is at Pontpéan in Brittany.

Manganese ore.—Carbonate of manganese is worked on a large scale at Las Cabesses mine (Ariège), and pyrolusite at the Romanèche and Grand-Filon mines (Saône-et-Loire).

Salt.—Much of the salt comes from a thick bed of rock salt in the Upper Trias in the department of Meurthe-et-Moselle. The bay-salt is the result of the evaporation of sea-water in marshes on the shores of the Atlantic and the Mediterranean.

Zinc ore.—The two largest workings for zinc are those of Malines (Gard) and Bormettes (Var).

TABLE 397.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1896 and 1897.
1896.‡

Kind of Mines.	Under-ground.				Above-ground.					General Total.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	4,875	5,691	89,362	99,928	4,127	2,264	5,189	28,666	40,246	140,174
Other mines	71	159	8,399	8,629	120	149	251	2,802	3,322	11,951
Total	4,946	5,850	97,761	108,557	4,247	2,413	5,440	31,468	43,568	152,125

* Consular Report for District of Suakin, Foreign Office, 1896, Annual Series, No. 1689.

† Zeitschr. f. prakt. Geologie, 1898, p. 406.

‡ Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1896, p. 38.

FRANCE—continued.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1895 and 1897—continued.

1897.*

Kind of Mines.	Under-ground.				Above-ground.					General Total.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	—	—	—	101,693	—	—	—	—	41,708	143,401
Other mines ...	—	—	—	9,520	—	—	—	—	3,583	13,103
Total ...	—	—	—	111,213	—	—	—	—	45,291	156,504

TABLE 398.

PERSONS EMPLOYED at QUARRIES during the Years 1896 and 1897.†

Kind of Quarries.	1896.			1897.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Underground ...	12,753	8,262	21,015	13,490	8,577	22,067
Open ...	—	107,356	107,356	—	107,776	107,776
Total ...	12,753	115,618	128,371	13,490	116,353	129,843

TABLE 399.

QUANTITY and VALUE of the MINERALS raised from MINES and WORKINGS other than QUARRIES during the Years 1896 and 1897.‡

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Alum ...	171	8,550	—	—
Anthracite ...	1,485,000	—§	1,628,000	—§
Antimony ore ...	5,675	342,722	4,685	324,574
Bituminous shale, limestone, &c. ...	225,784	1,740,937	233,328	1,699,492
Brown coal ...	439,448	3,881,694	460,422	3,907,585
Coal ...	27,265,452	312,584,265||	28,709,207	330,100,854||
Copper ore ...	106	3,524	956	18,224
Iron ore... ..	4,062,390	12,826,029	4,582,236	15,040,138
Iron pyrites ...	282,064	3,561,434	303,448	3,763,290
Lead ore, argentiferous ...	19,042	2,253,545	21,212	2,781,303
Manganese ore ...	31,318	928,585	37,212	1,040,176
Peat ...	130,207	1,895,239	98,067	1,269,257
Rock salt and salt from brine	320,004	5,498,130	320,834	5,323,331
Salt { Salt contained in brine used for making soda ... }	237,203	1,361,545	286,587	1,487,387
Salt from sea water ...	485,407	5,508,165	340,582	4,388,400
Sulphur-bearing limestone ...	9,720	148,301	10,723	156,260
Zinc ore ...	81,346	5,800,109	83,044	6,525,014
Total value in Francs ...	—	358,345,774	—	377,825,285
„ £ sterling ...	—	14,333,831	—	15,113,011

* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1897*, p. 72.

† *Ibid.*, 1896, p. 69; 1897, p. 72.

‡ *Ibid.*, 1896, p. 37; 1897, p. 37.

§ Value included with coal.

|| Including value of anthracite.

FRANCE—continued.

TABLE 400.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1896 and 1897.*

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Aluminous earth	204	255	465	5,910
Asbestos	—	—	55	41,250
Barytes	2,791	41,284	3,209	43,680
Bauxite	33,820	244,165	41,740	276,055
Cement	934,624	22,782,514	976,813	23,582,357
Chalk	48,817	741,557	36,597	545,667
Clay {	China clay	57,360	1,229,926	70,713
	Fireclay	291,690	1,558,071	318,185
	Potter's clay	4,507,833	5,957,448	4,953,617
	Stucco	324	17,097	306
Flagstone	36,020	709,235	66,648	1,445,064
Fluor spar	1,940	30,340	2,722	40,802
Fuller's earth	—	—	4,000	17,400
Gypsum {	Plaster	1,429,550	12,580,558	1,382,269
	Manure	264,187	1,208,038	292,753
Lime	3,990,217	35,198,654	4,221,580	36,993,244
Lignite (Pyritiferous)	32,040	144,180	26,942	123,379
Lithographic stone	181	109,550	210	123,750
Magnesium carbonite	50	2,500	30	1,500
Marble	119,168	4,546,283	118,675	4,635,668
Marl	1,202,243	1,473,449	1,268,013	1,556,299
Millstones	28,237	1,121,734	32,175	1,220,414
Mosaic stone	2,700	67,500	2,500	62,500
Ochre	27,499	648,520	32,299	780,901
Onyx	54	3,000	54	3,000
Paving stone	677,213	10,789,815	568,677	9,590,524
Phosphate of lime	582,667	17,510,138	535,390	14,264,433
Sand, gravel, and flint	4,737,026	7,568,888	5,018,247	8,100,902
Slate {	Roofing	305,147	15,846,252	341,887
	Slabs	1,148	155,031	1,143
Steatite, talc, and asbestos	4,504	128,162	10,629	214,047
Stone for building	10,089,845	45,422,856	10,105,438	46,775,514
„ (broken for ballast)	11,094,537	22,553,641	11,477,817	24,192,806
Whetstones	951	583,835	1,908	318,319
Total value in Francs	—	210,974,476	—	216,258,796
„ £ sterling	—	8,438,979	—	8,650,352

TABLE 401.

DEATHS from ACCIDENTS at MINES during the Years 1896 and 1897.†

Kind of Mines.	1896.						1897.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Anthracite, brown coal, and coal.	162	20	182	1·62	·50	1·30	136	17	153	1·34	·41	1·07
Other mines ..	17	3	20	1·97	·90	1·87	24	3	27	2·52	·84	2·06
Totals ..	179	23	202	1·65	·53	1·33	160	20	180	1·44	·44	1·1

* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1896*, pp. 53 and 54; 1897, p. 58.† *Ibid.*, 1896, p. 69; 1897, p. 72.

FRANCE—*continued.*

TABLE 402.

DEATHS FROM ACCIDENTS AT QUARRIES during the Years 1896 and 1897.*

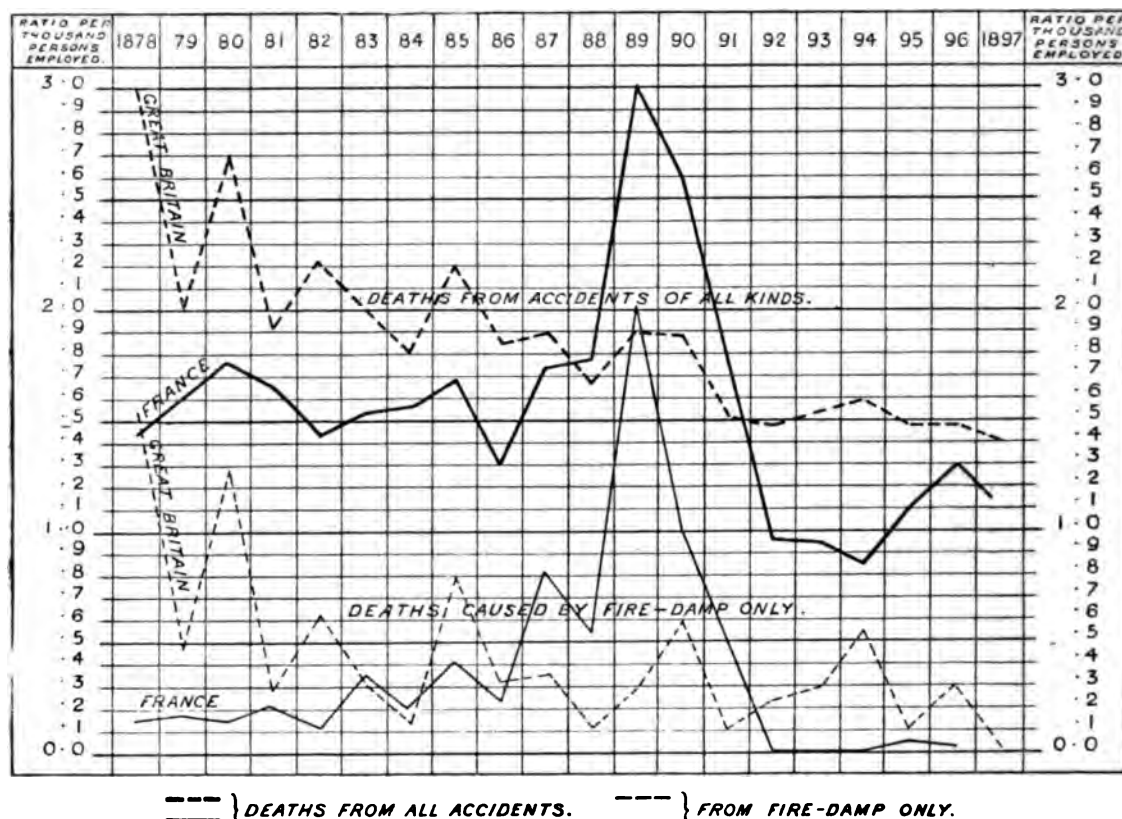
Kind of Quarries.	1896.						1897.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Underground ..	36	3	39	2.77	.36	1.84	49	1	50	3.57	.12	2.24
Open	—	105	105	—	.97	.97	—	99	99	—	.91	.91
Total	36	108	144	2.77	.83	1.11	49	100	149	3.57	.84	1.13

French coal miners have a comparatively low death-rate from accidents, as shown by the accompanying diagram, which relates to all fatalities whether above or below-ground; accidents from fire-damp are shown by a separate curve.

It is important to notice that the French Inspectors charge to fire-damp all accidents which it causes, whether by explosion or suffocation. All the three deaths in 1896 were due to the latter cause. In England such accidents would be classified under the heading "Suffocation by natural gases."

For the purposes of comparison I have added the curves representing the death-rate at mines under the Coal Mines Act in this country. It is true that this Act includes sundry workings other than coal mines, but the latter are so overwhelming numerous that the curve is sufficiently near for coal mines only. It must be admitted that on the whole the French curve is more favourable than ours, though the steady fall of the British line is encouraging.

Diagram showing Comparison between French and British death-rates from Accidents in Coal Mines.



* *Statistique de l'Industrie Minière en France et en Algérie pour l'année, 1896, p. 69*; and Official Return furnished by the Department of Mines, Paris.

FRANCE—continued.

The death-rates of the underground hands in 1896 and 1897, taken separately, were :—

	1896.	1897.
Coal Mines	1·62	1·34
Ore Mines	1·97	2·52
Underground Quarries	2·78	2·24

As in this country, the Inspectors of Mines in France are charged with the duties of administering at mines and quarries the law relating to the employment of women and children (Loi du 2 Nov. 1892*).

This law is generally well observed, and more especially by the large companies. The prosecutions were only 6 in number, and referred simply to the employment of children at night, or to breaches of the law connected with accidents. Judging by the small number of prosecutions the managers of mines and quarries in France are certainly very law-abiding.

French Guiana†.

TABLE 403.

QUANTITY of GOLD produced in 1895 and 1896.

1895.		1896.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 2,807	Francs ... 9,672,000 £ sterling 386,880	Kilos. 3,171	Francs ... 10,922,000 £ sterling 436,880

Like the other Guianas, the French Colony is auriferous, and it is probable that its resources as a gold-producing country are to a great extent undeveloped.

The little island called Grand-Connétable is said to be entirely composed of phosphate of lime ; 6,605 tons were raised in 1894 ; no later figures are available.

French Possessions (See ALGERIA, ANNAM, FRENCH GUIANA, INDO-CHINA, and SENEGAL).

German Empire.

The importance of the mining industry of the German empire is apparent from the following tables, which show that in 1897 its mines employed 465,541 persons, and produced 120 million tons of coal, and 10 million tons of iron ore, besides other minerals, with a total value of nearly 42½ millions sterling.

Coal.—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany ; the principal workings are in the provinces of Brandenburg and Saxony.

There are three principal coal-mining districts in Prussia : (1) The Lower Rhine and Westphalian Basin, which is by far the most important ; (2) Silesia, and especially Upper Silesia ; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age ; near Hanover there are extensive workings in the Wealdon beds.

* *Journal Officiel*. Paris, 6 Dec. 1897, p. 6336.

† *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année, 1896, pp. 65 and 264 ; et pour l'année, 1896, p. 77.*

GERMAN EMPIRE—*continued.*

Copper.—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

Iron Ore.—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. The output of ore from the mines of Alsace-Lorraine is accountable for half the production of the mines in the German Empire, but the ore is of poor quality, containing only from 30 to 35 per cent of metal.

Lead Ore.—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Prussia.

Salts.—Kainite and other potassium salts are mined in the Province of Prussian Saxony and the Duchy of Anhalt; of late years Hanover has had a share in the production of these important and not very widely spread minerals, and a mine in Brunswick added to the yield in 1897. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

Zinc Ore.—Upper Silesia is the mainstay of the German zinc industry.

TABLE 404.

PERSONS EMPLOYED at the MINES of the GERMAN EMPIRE.

Mineral.	1896.*				1897.†			
	Under-ground.	Above-ground.		Total Below and Above Ground.	Under-ground.	Above-ground.		Total Below and Above Ground.
		Males.	Females.			Males.	Females.	
I.— <i>Chals and Asphalt.</i>								
Asphalt	105	175	—	280	94	152	—	246
Brown coal	16,867	20,339	989	38,195	17,355	21,694	1,008	40,057
Coal... ..	241,271	70,487	4,755	316,513	256,992	74,601	4,581	336,174
Graphite	145	73	5	223	115	118	—	233
Petroleum	—	396	—	396	—	432	—	432
Total	258,338	91,470	5,749	355,607	274,556	96,997	5,589	377,142
II.— <i>Salts.</i>								
Boracite	—	—	—	—	—	—	—	—
Kainite	517	487	—	1,004	908	1,030	—	1,938
Magnesium salts	—	—	—	—	—	—	—	—
Potassium salts other than kainite	3,800	2,109	1	5,910	4,329	2,308	5	6,642
Rock salt	554	366	9	929	561	335	9	905
Total	4,871	2,962	10	7,843	5,798	3,673	14	9,485
III.— <i>Ores.</i>								
Arsenic ore	155	191	—	346	181	199	—	380
Cobalt, nickel, and bismuth ores	591	156	17	764	477	148	13	638
Copper ore	11,085	2,996	—	14,081	11,303	3,116	1	14,420
Iron ore	20,531	8,234	1,430	30,195	22,771	8,275	1,283	32,329
Iron pyrites	347	192	—	539	318	203	—	521
Lead ore	6,977	4,903	409	12,289	7,199	4,773	413	12,385
Manganese ore	316	82	14	442	265	90	7	362
Silver and gold ores	3,250	1,174	1	4,425	2,809	1,235	1	4,045
Tin ore	18	40	—	58	15	29	—	44
Uranium and tungsten ores	20	17	—	37	20	21	—	41
Vitriol and alum ores, other than iron pyrites.	1	—	—	1	—	—	—	—
Zinc ore	7,521	3,735	2,135	13,391	7,732	3,833	2,184	13,749
Other ores	2	—	—	2	—	—	—	—
Total	50,844	21,720	4,006	76,570	53,090	21,922	3,902	78,914
Total for the German Empire	314,103	116,152	9,765	440,020	333,444	123,592	9,505	465,541
Grand Duchy of Luxemburg—iron ore	2,964	2,061	—	5,028	3,281	2,381	—	5,662

* *Vierteljahrshefte zur Statistik des Deutschen Reichs, Jahrgang, 1897, Berlin, IV. Heft.*† *Ibid.*, 1898.

GERMAN EMPIRE—continued.

TABLE 405.

PERSONS EMPLOYED at WELLS producing BRINE or other MINERAL SOLUTIONS during the Years 1896 and 1897.*

Mineral Solution.	1896.*			1897.†		
	Men.	Women.	Total.	Men.	Women.	Total
Sodium chloride	3,314	14	3,328	3,323	13	3,336
Potassium chloride	2,430	25	2,455	2,353	18	2,371
Sulphates or chlorides of sodium, potassium, magnesium, or aluminium.	677	7	684	649	10	659
Total	6,421	46	6,467	6,325	41	6,366

TABLE 406.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1896 and 1897.

Mineral.	1896.*		1897.†	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
I.—COALS AND ASPHALT.				
	Metric Tons.	Marks.	Metric Tons.	Marks.
Asphalt	61,552	453,393	61,645	378,534
Brown coal	26,780,873	60,882,922	29,419,503	66,250,567
Coal	85,690,233	592,976,389	91,054,982	648,938,742
Graphite	5,248	288,432	3,861	264,504
Petroleum	20,395	1,188,511	23,303	1,396,444
Total value	—	655,789,647	—	717,228,791
II.—SALTS.				
Boracite	184	42,481	198	40,887
Kainite	877,885	13,298,759	992,389	13,944,029
Magnesium salts	2,350	20,821	2,601	22,546
Potassium salts, other than kainite ...	902,707	11,857,234	953,798	12,120,574
Rock salt	758,866	3,249,108	763,412	3,217,191
Total value	—	28,468,403	—	29,345,227
III.—ORES.				
Antimony ore and quicksilver ...	—	—	—	—
Arsenic ore	3,691	187,840	3,777	224,085
Cobalt, nickel, and bismuth ores ...	4,087	629,846	3,355	559,108
Copper ore	717,346	16,958,664	700,619	19,010,207
Iron ore	9,403,594	41,916,628	10,116,970	48,903,250
Iron pyrites	1,916,8	974,975	133,302	964,467
Lead ore	157,514	12,996,249	150,179	13,015,537

* Vierteljahrshäfte zur Statistik des Deutschen Reichs, Jahrgang, 1897, Berlin, IV. Heft.

† Ibid., 1898.

GERMAN EMPIRE—*continued.*

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1896 and 1897—*continued.*

Mineral.	1896.		1897.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES— <i>cont.</i>	Metric Tons.	Marks.	Metric Tons.	Marks.
Manganese ore	45,062	480,618	46,427	461,423
Silver and gold ores	11,320	1,712,380	9,708	1,453,084
Tin ore	88	35,201	55	23,926
Uranium and tungsten ores	41	28,336	38	33,468
Vitriol and alum ores, other than iron pyrites.	369	2,050	225	1,351
Zinc ore	729,942	17,023,279	663,850	16,881,357
Total value	—	92,946,066	—	101,531,263
Total value for the German Empire in marks.	—	777,204,116	—	848,105,281
Total value for the German Empire in £ sterling.	—	£38,860,205	—	£42,405,264
Grand Duchy of Luxemburg—iron ore	4,758,741	9,482,023	5,349,010	11,184,440

TABLE 407.

QUANTITY and VALUE of MINERALS produced from BRINE, &c. WELLS during the Years 1896 and 1897.

Mineral Solution.	1896.*		1897.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
1. Alkaline sulphates :—				
(a.) Potassium sulphate... ..	19,682	3,253,524	13,774 •	2,262,882
(b.) Potassium and magnesium sulphate.	4,623	343,910	7,812	596,315
(c.) Sodium sulphate	71,958	1,795,659	68,822	1,736,791
2. Earthy sulphates :—				
(a.) Aluminium sulphate	34,370	2,380,483	37,053	2,454,737
(b.) Alum	3,430	353,195	2,995	295,353
3. Magnesium chloride	17,525	229,544	18,014	257,175
4. Magnesium sulphate	27,161	431,340	35,072	622,338
5. Potassium chloride	174,515	22,874,237	168,001	23,057,692
6. Salt (sodium chloride)	547,486	14,650,022	543,272	12,136,514
Total value in marks	—	46,311,914	—	43,419,797
„ „ £ sterling	—	£2,315,596	—	£2,170,989

The following tables give the output and value of some of the more important minerals, classified according to the States in which they were produced.

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1897, Berlin, IV. Heft.

† *Ibid.*, 1898.

GERMAN EMPIRE—continued.

TABLE 408.

Brown Coal.

State.	1896.*		1897.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Anhalt ...	1,112,837	3,102,259	1,219,704	3,389,956
Bavaria ...	41,366	142,190	41,098	104,383
Brunswick ...	929,988	2,870,570	1,057,192	3,170,991
Hesse ...	222,574	571,969	220,923	550,716
Prussia ...	21,981,201	48,781,565	24,222,911	53,296,979
Saxe Altenburg ...	1,430,062	2,670,626	1,535,876	2,927,678
Saxony ...	1,035,825	2,666,360	1,073,239	2,665,433
Other German States ...	27,020	77,383	48,560	144,431
Total value in marks ...	26,780,873 }	60,882,922	29,419,503 }	66,250,567
" " £ sterling ...		£3,044,146		£3,312,528

TABLE 409.

Coal.

State.	1896.*		1897.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Alsace-Lorraine ...	1,027,699	8,359,571	1,057,544	8,839,438
Bavaria ...	975,738	8,933,237	1,007,403	9,636,829
Prussia ...	78,993,655	531,128,418	84,253,393	582,660,597
Saxony ...	4,536,603	43,112,020	4,571,685	46,252,857
Other German States ...	156,538	1,443,143	164,957	1,549,021
Total value in marks ...	85,690,233 }	592,976,389	91,054,982 }	648,938,742
" " £ sterling ...		£29,648,819		£32,446,937

TABLE 410.

Rock Salt.

State.	1896.*		1897.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Prussia ...	305,227	1,387,807	310,755	1,414,787
Württemberg ...	233,593	964,970	233,242	867,226
Other German States ...	220,047	895,331	219,416	915,178
Total value in marks...	758,867 }	3,249,108	763,413 }	3,217,191
" " £ sterling ...		£162,455		£160,859

* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1897, Berlin, IV. Heft.

† Ibid., 1898.

GERMAN EMPIRE—continued.

TABLE 411.

Iron Ore.

State.	1896.*		1897.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Alsace-Lorraine	4,841,633	10,977,687	5,360,840	12,317,594
Bavaria	163,503	691,986	175,305	726,718
Brunswick	99,582	178,976	108,502	215,799
Hesse	193,484	1,432,612	205,476	1,580,353
Prussia	4,053,109	28,407,328	4,183,536	33,731,064
Waldeck... ..	26,900	105,165	31,097	126,471
Other German States	25,383	122,874	52,214	205,251
Total value in marks... ..	9,403,594	{ 41,916,628 £2,095,831 }	10,116,970	{ 48,903,250 £2,445,162 }
" " £ sterling				
Grand Duchy of Luxemburg ...	4,758,741	9,482,023	5,349,010	11,184,440

TABLE 412.

Silver and Gold Ores.‡

	1896		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Saxony	11,305	1,637,387	9,702	1,433,478
Other German States	15	74,993	6	19,606
Total value in marks... ..	11,320	{ 1,712,380 £85,619 }	(a) 9,708	{ 1,453,084 £72,654 }
" " £ sterling				

According to a return of the miners' sick and accident clubs for 1897,§ the deaths among persons employed in and about mines in the German Empire have been as follows :—

TABLE 413.

DEATHS FROM ACCIDENTS AT MINES AND OTHER MINERAL WORKINGS IN GERMANY.

Year.	Deaths.	Death-rate per 1,000 Persons Employed.||	Year.	Deaths.	Death-rate per 1,000 Persons Employed.||
1886	864	2.51	1892	869	2.05
1887	816	2.35	1893	956	2.27
1888	791	2.21	1894	814	1.91
1889	866	2.31	1895	932	2.16
1890	871	2.19	1896	987	2.21
1891	1,026	2.44	1897	961	2.05

* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1897, Berlin, IV., Heft.

† Ibid., 1898.

‡ Ibid., 1897, II. Heft.

§ Return furnished by der Vorstand der Knappschafts-Berufsgenossenschaft, Berlin.

|| The number of deaths is liable to slight alterations every year in consequence of persons dying after a time from injuries originally classed as non-fatal.

(a) 2,781 kilos. of fine gold and 448,068 kilos. of fine silver were extracted at the Metallurgical Works in 1897.

GERMAN EMPIRE—*continued.*

TABLE 414.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1897.*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines	43,018	89	—	89	2.07
Coal mines	328,967	745	2	747	2.27
Ore mines and smelting works... ..	75,657	81	—	81	1.07
Salt mines and brine works	14,552	35	—	35	2.41
Other mineral workings... ..	6,759	9	—	9	1.33
Total	468,953	959	2	961	2.05

Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

BAVARIA.†

TABLE 415.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1896 and 1897.

Kind of Mines or Mineral Workings	1896.		1897.		Kind of Mines or Mineral Workings.	1896.		1897.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Barytes	48	145	47	131	Melaphyre... ..	—	—	—	—
Basalt	612	933	620	924	Ochre, &c.	75	157	89	117
Brown coal	264	307	5,792	10,957	Paving stones	243	6	271	769
Cement marl	188	—	195	5	Petroleum... ..	—	—	13	12
Coal	5,427	11,160	210	561	Porcelain earth	123	282	127	129
Copper ore	1	—	42	21	Salt rock	106	135	103	128
Emery	7	23	9	17	.. from brine	240	550	242	517
Feldspar	37	77	31	86	Sand	14§	—	21‡	41‡
Fireclay	558	1,263	578	1,180	Sandstone... ..	923‡	2,133‡	994§	2,138§
Fluorspar	36	138	37	104	Slate (roofing and slabs)	91	203	87	213
Granite‡	2,664‡	1‡	1,620§	3,736§	Steatite	102	287	76	250
Graphite	223	108	233	200	Whetstone	32	—	40	—
Gypsum	69	—	69	6					
Iron ore	719	1,335	693	1,639					
Iron pyrites	45	104	35	95					
Limestone	476	711	491	929					
Manganese ore	2	—	3	—					
					Total	13,325	20,064	12,773	24,905

* Return furnished by der Vorstand der Knappechafts-Berufsgenossenschaft, Berlin.

† Return furnished by the Royal Bavarian Mining Department, Munich.

‡ Not including those employed in Zweibrücken and Bayreuth.

§ Not including those employed in Zweibrücken.

GERMAN EMPIRE—BAVARIA—continued.

TABLE 416.

QUANTITY and VALUE of MINERALS obtained during the Years 1896 and 1897.

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ...	3,397	13,615	3,365	11,624
Basalt ...	242,886	456,432	265,789	508,057
Brown coal ...	35,934	134,326	39,044	99,651
Cement marl ...	98,481	399,718	97,831	242,363
Coal ...	900,080	8,516,276	917,022	9,068,343
Emery ...	249	10,110	217	9,230
Feldspar ...	1,315	12,580	1,689	18,713
Fireclay ...	110,174	1,007,597	144,425	1,201,980
Fluorspar ...	5,218	33,120	4,904	22,976
Granite ...	185,453	2,279,855	152,688	1,600,243
Graphite ...	5,248	288,432	3,861	264,504
Gypsum ...	28,799	61,335	26,153	54,436
Iron ore ...	161,279	657,047	172,699	695,235
„ pyrites ...	1,997	59,721	2,211	28,321
Limestone ...	238,434	299,929	224,550	305,539
Lithographic stone ...	10,868	652,080	13,941	871,282
Manganese ore ...	70	140	130	790
Melaphyre ...	230,242	690,726	245,272	735,816
Ochre, &c. ...	8,667	105,984	8,673	103,488
Paving stones ...	20,559	346,480	14,648	229,372
Porcelain earth ...	19,080	105,073	24,086	153,381
Salt, rock ...	708	18,287	1,161	22,347
„ from brine ...	40,400	1,753,518	41,533	1,552,116
Sand ...	29,868	33,764	31,678	35,248
Sandstone ...	235,518	1,286,364	242,112	1,260,470
Slates (roofing and slabs) ...	1,565	57,008	1,496	56,002
Steatite ...	3,051	209,832	2,464	141,441
Whetstone ...	88	14,960	95	15,200
Total value in Marks ...	{ — }		{ — }	
„ „ £ sterling ...	{ — }		{ — }	

PRUSSIA.

TABLE 417.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1896 and 1897.*

Kind of Mines or other Mineral Workings.	Number of Persons Employed.	
	1896.	1897.
Brown coal ...	31,258	33,020
Coal ...	284,477	303,370
Ore ...	63,307	64,971
Other mineral workings ...	12,732	14,277
Total ...	391,774	415,638

* Zeitschr. B. H. S. W., Vol. XLVI., p. 45.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 418.

QUANTITY and VALUE of MINERALS obtained from MINES during the Years
1896 and 1897.

Mineral.	1896.*			1897.†		
	Number of Mines.	Output.		Number of Mines.	Output.	
		Quantity.	Value.		Quantity.	Value.
I.—Coals and Asphalt.						
Asphalt	4	Metric Tons. 16,204	Marks. 174,860	3	Metric Tons. 11,466	Marks. 74,825
Brown coal	381	21,981,201	48,781,565	382	24,222,911	53,296,979
Coal	272	78,993,655	531,128,418	273	84,253,393	582,660,597
Petroleum	6	1,512	187,469	6	2,600	292,153
Total	663	—	580,272,312	664	108,490,370	636,324,554
II.—Salts.						
Boracite (pure)	—	171	39,582	—	185	38,652
Kainite	5	616,462	9,696,530	9	716,348	10,117,395
Magnesium salts	—	1,793	15,885	—	2,248	19,526
Potassium salts, other than kainite.	6	587,306	7,147,144	7	640,236	7,594,589
Rock salt	5	305,227	1,387,807	5	310,755	1,434,787
Total	16	—	18,286,948	21	1,669,772	19,204,949
III.—Ores.						
Antimony ore	—	—	—	—	—	—
Arsenic ore	3	3,247	164,785	3	3,377	202,620
Cobalt ore	5	181	39,473	3	121	25,024
Copper ore	12	707,395	16,745,285	16	690,338	18,782,718
Gold and silver ore	1	15	74,993	2	6	19,606
Iron ore	433	4,053,109	28,407,328	495	4,183,536	33,731,064
Iron pyrites... ..	4	117,545	814,978	4	121,766	836,816
Lead ore	101	152,628	11,993,733	126	133,158	12,491,520
Manganese ore	14	43,614	409,535	12	45,254	412,547
Nickel ore	3	738	18,161	3	204	6,322
Quicksilver ore	1	—	—	—	—	—
Vitriol ores and alum ores, other than iron pyrites.	—	154	922	—	129	772
Zinc ore	40	729,725	17,017,405	43	663,739	16,879,042
Total	617	—	75,686,598	707	5,841,628	83,388,051
Gross Total	1,296	—	674,245,858	1,392	116,001,770	738,917,554
Total value in £ sterling	—	—	33,712,293	—	—	36,945,878

* Zeitschr. B. H. S. W., Vol. XLV., p. 20.

† Zeitschr. B. H. S. W., Vol. XLVI., p. 20.

GERMAN EMPIRE.—PRUSSIA—*continued.*

TABLE 419.

QUANTITY and VALUE of SALTS obtained from BRINE WELLS, &c. during the Years 1896 and 1897.

Description of the Product.	1896.*					1897.†				
	Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.		Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.	
	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.
1. Alkaline Sulphates:—			Metric Tons.	Metric Tons.	Marks.			Metric Tons.	Metric Tons.	Marks.
(a) Potassium sulphate ..	2	6	42,367	15,325	2,528,314	1	6	36,089	10,438	1,706,929
(b) Potassium and magnesium sulphate.	—	5	‡	3,732	275,931	—	3	‡	7,328	557,587
(c) Sodium sulphate ..	10	7	40,620	49,383	1,173,539	8	8	37,764	45,356	1,060,478
2. Earthy Sulphates:—										
(a) Aluminium sulphate..	5	2	10,319	11,890	843,743	6	1	10,319	12,037	801,361
(b) Alum	2	—	965	903	96,080	2	1	724	763	76,908
3. Magnesium chloride ..	—	2	18	5,507	84,500	—	2	18	5,768	88,414
4. Magnesium sulphate ..	—	9	35	17,174	275,429	—	9	35	21,799	396,883
5. Potassium chloride ..	12	3	538,008	107,963	13,389,928	12	3	534,410	101,710	13,299,491
6. Salt (sodium chloride) ..	36	6	102,125	288,300	7,392,866	36	6	98,810	274,888	6,573,892
Total	67	41	734,466	500,177	26,060,130 £1,303,006	65	39	718,169	480,087	24,561,943 £1,228,097

TABLE 420.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Years 1896 and 1897.‡

Kind of Mines or other Mineral Workings.	1896.		1897.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Brown coal	52	1·66	78	2·36
Coal	733	2·58	714	2·35
Ore	72	1·14	68	1·05
Other mineral workings	21	1·65	23	1·61
Total	878	2·24	883	2·12

* *Zeitschr. B. H. S. W.*, Vol. XLV., p. 21.† *Zeitschr. B. H. S. W.*, Vol. XLVI., p. 21.

‡ Included with 1 (a) and 5.

§ *Zeitschr. B. H. S. W.*, Vol. XLVI., p. 45.

GERMAN EMPIRE.—PRUSSIA—*continued*.

TABLE 421.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS, classified according to kind of MINERAL WORKED, and cause of ACCIDENT, during the Year 1897, and the DEATH-RATE for 1896.*

Cause of Accident.	Deaths from Accidents.					Death-rate per 1,000 Persons Employed.	
	Brown Coal Mines.	Coal Mines.	Ore Mines.	Other Mineral Workings.	Total.	1897.	1896.
Blasting ...	—	32	1	3	36	0·09	0·06
Falls of ground ...	22	244	33	8	307	0·74	0·81
On inclines and intermediate shafts.	—	105	6	1	112	0·27	0·26
In shafts ...	14	106	15	3	138	0·33	0·24
In levels ...	2	48	2	—	52	0·13	0·08
Fire-damp ...	—	64	—	—	64	0·15	0·10
Suffocation ...	8	21	—	—	29	0·07	0·32
Machinery ...	1	9	1	—	11	0·03	0·04
Irregularities ...	12	—	—	—	12	0·03	0·01
On surface ...	16	56	8	7	87	0·21	0·25
Sundries ...	3	29	2	1	35	0·08	0·07
Total ...	78	714	68	23	883	2·12	2·24

TABLE 422.

EXPLOSIONS of FIRE-DAMP or COAL DUST classified according to CAUSE.†

Cause.		1896.			1897.		
		Number of Deaths.	Number of Persons Injured.	Total.	Number of Deaths.	Number of Persons Injured.	Total.
I. Lighting	1. Naked lights ...	—	1	1	—	2	2
	2. Matches or smoking	—	1	1	1	1	2
	3. Illegally opened ...	1	2	3	4	6	10
	4. In defective condition or injured during work.	1	2	3	1	13	14
	5. Gauze becoming red hot.	—	2	2	2	1	3
	6. Oil or soot on gauze taking fire	—	1	1	—	—	—
	7. Flame driven through gauze by ventilating current.	2	3	5	—	3	3
	8. Flame driven through gauze by improper handling.	5	17	22	6	13	19
	9. Passage of flame when relighting by amorces	—	2	2	1	1	2
II. Shot firing ...	10. ...	1	12	13	3	8	11
III. Underground fires.	11. Ventilating furnaces	—	—	—	—	—	—
	12. Accidental or spontaneous ignition of mineral, timber, or other material.	—	—	—	—	—	—
IV. Miscellaneous	13. Sparks from tools (?)	—	—	—	—	—	—
	14. Sundries or unknown	—	1	1	—	2	2
Total ...		10	44	54	18	50	68

* *Zeitschr. B. H. S. W.*, Vol. XLVI., pp. 48-50.† *Ibid.*, pp. 67 and 68.

GERMAN EMPIRE—PRUSSIA—*continued.*

If this table is compared with the corresponding figures for our own country (Part II., p. 66), one cannot help being struck by the very small number of accidents from naked lights which take place in Germany.

In addition to the accidents by explosions recorded in the table, there were four fatal cases of suffocation by firedamp.

The worst accident for the year happened at Cleophas colliery in Upper Silesia; the timber in one of the shafts took fire in some unexplained manner, and the smoke suffocated 104 persons before they could escape.

Some of the most remarkable explosions of firedamp in Prussian collieries in 1897 are specially described in the Official Journal.*

SAXONY.†

TABLE 423.

PERSONS EMPLOYED at MINES during the Years 1896 and 1897.

Kind of Mines.	1896.			1897.		
	Males.	Females.	Total.	Males.	Females.	Total.
Brown coal	2,058	133	2,191	2,122	127	2,249
Coal	22,278	310	22,588	22,442	338	22,780
Ore	5,530	4	5,534	5,128	1	5,129
Total	29,866	447	30,313	29,692	466	30,158

According to the Saxon Year-book, 72,752 persons were dependent upon the 30,158 workers in and about mines.

TABLE 424.

QUANTITY and VALUE of MINERALS obtained during the Years 1896 and 1897.

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes	574	6,217	218	2,466
Bismuth, cobalt, and nickel ores ...	3,169	566,941	3,031	527,807
Brown coal	1,035,825	2,666,360	1,073,239	2,665,433
Coal	4,536,603	43,112,020	4,571,685	46,252,857
Fluor spar	805	6,037	592	4,440
Iron ore	3,499	17,257	13,181	51,347
Lead ore... ..	2,844	623,391	—	—
Limestone, &c.	10	27,869	65	30,727
Manganese ore	10	520	260	2,550
Ochre and umber	333	4,215	93	2,574
Pyrates (arsenical, iron, and copper)...	8,835	108,319	9,402	116,449
Quartz, mica, and uranium ore ...	20	3,307	40	2,517
Silver ore	13,315	1,820,734	11,429	1,798,501
Tin ore	88	34,219	55	23,926
Wolfram	40	28,596	37	28,140
Zinc ore	72	1,493	112	2,315
Specimens	—	2,823	—	2,162
Total value in marks ...	—	49,030,318	—	51,514,211
" " " £ sterling ...	—	£2,451,516	—	£2,575,711

* *Zeitschr. B. II. S. W.*, Vol. XLVI., pp. 237-246.

† *Jahrbuch für das Berg-und Hüttenwesen im Königreiche Sachsen auf das Jahr 1898*, Freiberg, pp. 79, 81, 167-169.

GERMAN EMPIRE.—SAXONY—*continued.*

TABLE 425.

DEATHS from ACCIDENTS at MINES during the Year 1897, and DEATH-RATES for the Years 1893–1897.

Kind of Mines.	Number of Persons Killed, 1897.	Death-rate per 1,000 Persons Employed.				
		1893.	1894.	1895.	1896.	1897.
Brown coal	8	·82	2·19	3·97	1·39	3·61
Coal	38	1·16	1·03	1·14	1·30	1·69
Ore	5	1·41	·66	—	0·36	0·92
Total and average ...	51	1·18	1·04	1·13	1·13	1·71

German East Africa.

Coal* has been found in several places along a little tributary of the river Kandete.

Gold† occurs in the province of Usambara.

Greece.‡

The principal mineral productions of Greece are the ores of iron, lead, and zinc, which are chiefly obtained in Southern Attica.

Some of the islands of the Grecian archipelago are producers of iron ore. Eubœa is remarkable for its deposits of magnesite; Naxos for its emery. Milos yields gypsum, manganese ore, millstones and sulphur. Salt is obtained from sea water in the island of Leucados and at Anavyssos near Laurium. The salt industry is a Government monopoly from which the State derives a considerable revenue. Marble is abundant in Greece; the most important quarries are in the islands of Paros, Skyros, and Tinos, and in the Penthelican range.

TABLE 426.

PERSONS EMPLOYED at MINES during the Year 1894.

Under-ground.			Above-ground.			Gross Total.
Males.	Females.	Total.	Males.	Females.	Total.	
3,393	17	3,410	2,491	196	2,687	6,097

* "Ueber die Kohलगewinnung im nördlichen Nyassagebiet." *Glückauf*, Vol. XXXIV, 1898, p. 906.
† "Goldfunde in der Provinz Usambara in Deutsch-Ostafrika," *Ibidem*, Vol. XXXI, 1895, p. 1,032.
‡ Official Return furnished by the Bureau of Mines, Athens.

GREECE.—*continued.*

TABLE 427.

QUANTITY and VALUE of MINERALS produced during the Years 1895 and 1896.

Mineral.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chromite	2,632	105,280	1,402	56,080
Cupreous pyrites	2	160	—	—
Emery	2,442	260,073	2,795	297,667
Gypsum	166	14,940	200	18,000
Iron ore (magnetic)	3,900	46,800	11,150	133,800
„ (manganiferous)	335,057	3,086,171	404,837	3,617,467
Lead (argentiferous pig lead)	16,857	7,922,790	15,312	7,196,640
„ fume, &c.... ..	3,183	206,895	2,341	152,165
„ ore... ..	23,362	790,760	21,598	799,160
Lignite	14,068	140,680	13,812	138,120
Magnesite, crude	12,039	240,780	11,568	231,360
„ calcined	—	—	452	43,000
„ bricks	707	123,725	795	141,625
Manganese ore	—	—	—	—
Millstones Pieces	15,000	37,500	15,000	37,500
Salt from sea water	20,000	2,000,000	20,000	2,000,000
Sulphur	1,802	162,180	1,509	135,810
Zinc ore	24,185	2,048,065	20,763	1,762,585
Total value in francs	{ — }	17,186,799	{ — }	16,760,979
„ „ £ sterling	{ — }	£687,472	{ — }	£670,439

TABLE 428.

DEATHS from ACCIDENTS at MINES during the Year 1894.

Under-ground.			Above-ground.			Gross Total.	Death-rate per 1,000 Persons Employed.
Males.	Females.	Total.	Males.	Females.	Total.		
9	—	9	—	—	—	9	1.48

Guatemala.*

Mining appears to be an industry of small importance in this country.

Gold is washed from the sand of some of the rivers ; and the Indians obtain turquoises from mines.

Copper and lead were worked before and after the conquest of the country by the Spaniards, and probably the mines are not yet exhausted.

Coal and lignite † occur in various parts of the country, besides sundry other useful minerals.

Herzegovina. (See AUSTRIA-HUNGARY.)

* "Some Minerals found in the Republic of Guatemala," by Dr. J. R. Chandler, *The Engineering and Mining Journal*, Vol. LXII., 1896, p. 130, New York.

† Niederlein, *The Republic of Guatemala*, Philadelphia. 1898.

Holland.*

Mining in Holland is practically restricted to some comparatively unimportant workings for coal and stone in the Province of Limburg.

TABLE 429.

PERSONS EMPLOYED at MINES during the Years 1896 and 1897.

Year.	Below-ground.			Above-ground.			Total Number of Persons Employed in and about the Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1896 ...	338	—	338	125	2	127	465
1897 ...	344	—	344	137	2	139	483

TABLE 430.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years 1896 and 1897.

Year.	Below-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines
	Males.	Females.	Total.	Males.	Females.	Total.	
1896 ...	42	—	42	51	—	51	93
1897 ...	40	—	40	95	—	95	135

TABLE 431.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
Building stone ... <i>Cubic Metres</i>	4,558	Florins. 9,040	2,178	Florins. 4,275
Coal ... <i>Metric Tons</i>	137,787	350,000	150,145	381,220
Total value in Florins ...	—	359,040	—	385,495
„ „ £ sterling ...	—	£29,920	—	£32,125

TABLE 432.

DEATHS from ACCIDENTS at MINERAL WORKINGS other than MINES during the Years 1896 and 1897.

Year.	Below-ground.			Above-ground.			Total Number of Deaths Below and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Above-ground.	Below and Above Ground.
1896	—	—	—	1	—	1	1	10.75	2.15
1897	—	—	—	1	—	1	1	7.40	2.07

* Official Returns furnished by the Government of the Netherlands.

Indo-China.

COCHIN CHINA.*

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895; but the industry was at a standstill in 1896.

TONG-KING.†

Numerous very important coal seams exist on the peninsula of Hongay; those which are being worked vary in thickness from 6 feet to 200 feet (50–60 m.), for the big seam at Haton attains this enormous size and furnishes 100 to 130 ft. (30–40 m.) of merchantable fuel.

The Hongay coal generally is characterized by the small percentage of ash and of sulphur. On the whole it is an anthracitic coal with a small percentage of hydrogen, and it burns with a short flame and scarcely any smoke.

The Hongay and the Kebao collieries produced altogether 137,000 tons of coal in 1896.‡

Italy.

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc ore and lead ore; these are far more largely worked in Sardinia than in the peninsula itself. Again, in the case of iron ore, it is an island, Elba, which is the mainstay of the industry. England absorbs about two-thirds of the entire output, and Germany most of the remaining third.§ The marble quarries of the Apuan Alps have long been a source of wealth to the country.

With reference to sulphur, the Inspector of Mines for the Caltanissetta district points out that the process of liquation in kilns (*calcaroni*) is gradually being replaced by improved methods of treatment in steam apparatuses and Gill furnaces.

The report of the Inspector for the Carrara district contains a useful account of the method of employing the endless wire saw, not only for subdividing big blocks of marble, but also for excavating marble from the face of the quarry. Monticolo's improved form of endless wire saw with a "penetrating pulley" is figured in the report.||

The manner of preparing ochre and umber for the market at Leghorn is described by Mr. Carmichael¶ in his report for the year 1897.

* *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année, 1896*, p. 76.

† Brard "Les Charbonnages d' Hongay, Tonkin." *Bull. Soc. Ind. Minérale*. 3e Série, Vol. XI., 1897, p. 155.

‡ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année, 1896*, p. 76.

§ *The Trade of the Island of Elba for the year 1897*. Consular Report, No. 2127, Annual Series, June 1898, p. 5.

|| *Rivista del Servizio Minerario nel 1897*, pp. 80, 84, and 114.

¶ *Report on the Trade and Commerce of Leghorn for the year 1897*. Consular Report, No. 2075, Annual Series, 1898, p. 12.

ITALY—continued.

TABLE 433.

NUMBER of MINERAL WORKINGS, VALUE of OUTPUT, and NUMBER of PERSONS EMPLOYED in the Years 1896 and 1897.*

Kind of Workings.	1896.			1897.		
	Number at Work.	Total Value of Output.	Number of Persons Employed.	Number at Work.	Total Value of Output.	Number of Persons Employed.
Mines	1,052	Lire. 48,969,105	46,352	1,359	Lire. 64,670,383	53,576
Quarries	5,033	27,519,195	30,945	5,307	30,197,988	31,520
Turbaries	35	203,622	804	41	198,130	861
Sea salt	72	4,280,363	3,281	72	4,428,187	3,148
Total	—	Lire 80,972,285 £ sterling 3,238,891†	81,382	—	Lire 99,494,688 £ sterling 3,979,787†	89,105

TABLE 434.

NUMBER of PERSONS EMPLOYED in and about MINES and other MINERAL WORKINGS during the Years 1896 and 1897,* classified according to mineral wrought.

Kind of Mines or other Mineral Workings.	1896.		1897.	
	Number of Mines or Workings.	Number of Persons Employed.	Number of Mines or Workings.	Number of Persons Employed.
Alum-stone	1	87	1	86
Antimony ore	47	319	15	180
Arsenic ore	—	—	1	6
Asphalt, &c.	15	722	15	805
Boric acid	12	349	12	345
Copper ore	25	1,491	31	1,553
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	45	2,247	55	2,285
Gas, carburetted hydrogen	(a)	(a)	(a)	(a)
Gold ore	51	776	47	828
Graphite	9	67	11	81
Iron ore	22	1,306	19	1,335
Iron pyrites	11	716	10	792
Lead ore	(b)	(b)	(b)	(b)
Manganese ore	9	122	7	80
Manganese and iron ore	1	143	1	181
Mineral waters	(a)	(a)	(a)	(a)
Nickel and cobalt ore	1	2	2	5
Petroleum	24	479	20	489
Quicksilver	9	500	12	470
Rock salt	26	332	26	337
Salt from springs	(a)	(a)	(a)	(a)
Silver ore	14	670	16	701
Sulphur	611	25,495	883	31,246
Zinc ore	119	10,529	175	11,771
Total	—	46,352	1,359	53,576

* *Rivista del Servizio Minerario nel 1896*, pp. xl. and xli. *nel 1897*, pp. xlii. and xliii.

† Value calculated at 25 Lire = 1l. sterling.

(a) Included with persons employed at petroleum workings.

(b) Included with zinc.

ITALY—continued.

TABLE 435.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1896 and 1897.*

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum stone	6,000	30,000	6,500	32,500
Antimony ore	5,086	302,950	2,150	174,320
Arsenic ore	—	—	34	3,400
Asphalt, &c.	45,456	888,638	55,339	948,273
Boric acid	2,616	837,120	2,704	865,280
Copper ore	90,408	2,123,594	93,377	2,156,146
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	276,197	1,981,861	314,222	2,335,557
Gas, carburetted hydrogen (cubic metres)	296,880	15,137	298,069	17,861
Gold ore... ..	7,659	853,008	10,723	890,048
Graphite	3,148	50,966	5,650	56,500
Iron ore	203,966	2,539,865	200,709	2,860,511
„ „ manganiferous	10,000	100,000	21,262	170,096
Iron pyrites	45,728	544,124	58,320	780,138
Lead ore	(a) 33,705	4,477,523	(b) 36,860	5,065,825
Manganese ore	1,890	102,250	1,634	75,040
Mineral waters	22,660	269,850	28,680	351,336
Peat	13,577	203,622	14,634	198,130
Petroleum	2,524	644,468	1,932	492,282
Quicksilver	14,305	737,850	20,659	788,910
Rocksalt... ..	17,370	260,120	19,801	272,018
Salt from springs	11,974	306,491	11,725	315,500
Salt, sea	422,555	4,280,363	429,253	4,428,187
Silver ore	640	536,254	405	428,260
Sulphur, rock	2,738,057	23,876,393	3,314,051	37,310,255
Zinc ore	118,171	7,490,645	122,214	8,280,327
Produce from quarries (value)	—	27,519,195	—	30,197,988
Total value in lire	—	Lire 80,972,285	—	Lire 99,494,688
„ „ £ sterling	—	£3,238,891	—	£3,979,788

TABLE 436.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1896 and 1897.†

Cause.	1896.					1897.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 lire worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 lire worth of Mineral produced.
Falls of ground	105	48	84	1.04	.98	114	93	74	1.74	1.44
Suffocation by gases, explosions, and fires.	12	9	8	.19	.18	21	14	25	.26	.22
Falling down shafts, &c., and miscellaneous.	75	17	60	.37	.35	51	14	38	.26	.22
Blasting	8	1	8	.02	.02	8	2	6	.04	.03
Total	200	75	160	1.62	1.53	194	123	143	2.30	1.90

* *Rivista del Servizio Minerario nel 1896*, pp. xxiii and xxx, *nel 1897*, pp. xxv, xxxii, and xliii.

† *Ibid.*, 1896, pp. lvi and lvii, *nel 1897*, pp. c and ci.

(a) Including 160 tons of lead and zinc ore, of the value of 13,200 lire.

(b) Including 660 tons of lead and zinc ore, of the value of 23,200 lire.

ITALY—continued..

TABLE 437.

ACCIDENTS at QUARRIES, arranged according to CAUSES, during the Years 1896 and 1897.*

Cause of Accident.	1896.				1897.			
	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.
Falls of ground	31	15	22	·48	24	17	13	·54
Falling down workings and miscellaneous.	32	7	26	·23	34	7	29	·22
Blasting	6	2	5	·06	4	1	3	·03
Total	69	24	53	·77	62	25	45	·79

Japan.

Coal, copper ore, and silver ore are Japan's most important minerals. The coloured diagram contained in the Official Statistical Abstract† shows that coal is responsible for half the total value of the mineral output of the Empire. Some of the mines are worked by the State and others by private individuals. The output of each class of mines is given separately.‡

TABLE 438.

PERSONS EMPLOYED at MINES during the Years 1894–1896.

Mines.	Persons Employed in the Year.		
	1894.	1895.	1896.
Coal	42,876	54,091	53,751
Other Mines	58,585	64,872	64,766
Total	101,461	118,963	118,517

In addition to the above, 5,639 and 5,673 persons were respectively employed at other mineral workings during the years 1895 and 1896.

* *Rivista del Servizio Minerario nel 1896*, p. lix., *nel 1897*, p. ciii.
† *Résumé Statistique de l'Empire du Japon*, Tokio, 1898.
‡ *Ibidem*, pp. 28 and 29

JAPAN—continued.

TABLE 439.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1894, 1895, and 1896.*

Mineral or Metal.	1894.		1895.		1896.	
	Quantity.	Value.†	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£	Metric Tons.	£
Antimony, crude } (metal)...	2,834	48,511	1,686	28,860	827	23,006
" refined }	—	—	—	—	517	102
Arsenic (metal) ...	—	—	—	—	6	—
Coal ...	4,301,420	1,663,408	4,809,873	1,196,683	5,019,690	1,275,787
Copper (metal) ...	19,908	660,501	19,110	634,025	20,114	720,484
Gold ...	kilos. 747	85,136	kilos. 896	97,357	kilos. 963	106,213
Graphite ...	1,091	7,028	77	496	215	1,385
Iron, pig ...	—	—	—	—	—	—
" pyrites ...	—	—	—	—	—	—
" speiss ...	—	—	—	—	—	—
" vitriol ...	—	—	—	—	—	—
Lead (metal) ...	1,425	15,613	1,948	21,343	1,958	20,514
Manganese ...	13,342	7,411	17,142	9,522	17,966	12,527
Petroleum ...	21,339	29,981	litres 26,967,804	27,423	litres 37,593,153	38,228
Quicksilver ...	—	—	—	—	2	293
Salt ...	—	348,307	—	386,667	—	—
Silver (metal) ...	kilos. 72,027	285,634	kilos. 72,263	286,570	kilos. 64,449	254,471
Sulphur ...	18,751	29,175	15,557	24,205	12,540	25,114
Tin (metal) ...	39	1,768	48	2,176	50	2,267
Total value ...	—	3,245,990	—	2,801,387	—	2,573,767

TABLE 440.

ACCIDENTS at MINES during the Years 1894–7.

Year.	Killed.	Injured.	Death-rate per 1,000 Persons Employed.
1894	53	62	0.52
1895	77	33	0.65
1896	44	45	0.37
1897	15	28	†

Java. (See DUTCH EAST INDIES.)

Johore.‡

A little tin mining is carried on ; the country is rich in iron ore.

Luxemburg.

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

* Fifth Statistical Abstract of Mineral Industry, published by the Mining Bureau of the Department of Agriculture and Commerce, Tokio, May, 1897.

Résumé Statistique de l'Empire du Japon, 12^e Année, Tokio, 1898.

† Values estimated.

‡ The death-rate for 1897 cannot be calculated as the number of persons employed during that year is not yet available.

§ The Straits Directory, 1897, p. 267.

Madagascar.*

The mineral wealth of the island appears to be great. In addition to gold, the ores of antimony, copper, iron, and tin are said to be abundant, to say nothing of coal, asphalt, and petroleum.

Mexico.†

There are no exact data concerning the number of persons employed. It may, however, be safely said that the mines of the Republic afford occupation for more than 40,000 men and 1,000 boys. Few women are employed, and they work solely above ground.

It is estimated that 5,000 persons are employed at open workings, such as quarries and brineworks.

TABLE 441.

VALUE of MINERALS produced and exported during the FISCAL YEARS 1895-1898.

Mineral.	Value.		
	1895-6.	1896-7.	1897-8.
Antimony ore	\$ 24,240	\$ 50,916	\$ 65,873
Asphalt	2,082	144	190
Coal	270,176	399,474	438,261
Copper	3,909,485	3,920,201	2,277,882
" ore	11,610	2,099	2,493,749
Gold	5,782,162	6,605,051	7,405,230 (a)
Graphite	8,771	8,750	8,663
Gypsum	8,750	7,275	11,250
Iron ore	778	—	—
Lead	2,531,624	2,814,074	2,909,705
" ore	23,920	118	—
Manganese	—	—	3,326
Marble	263,023	214,638	85,764
Pumice stone	—	—	1,300
Quicksilver... ..	3,780	3,150	—
Salt	2,738	5,749	16,691
Silver	59,056,434	59,578,046	68,237,102 (b)
Sulphur	—	—	3,000
Tin	6,032	2,305	—
Zinc ore	—	20,388	22,323
Total value in \$	71,905,605	73,632,378	83,980,309
" " £	7,490,167	7,670,039	8,747,949

(a) = value of 10,964 kilos. of gold.

(b) = value of 1,667,777 kilos. of silver.

Though sulphur is not mentioned in the table above, it is now being obtained from the crater of Popocatepetl.‡

The number of persons killed by mining accidents is not known precisely ; but it does not exceed 2 per 1,000.

Morocco.§

There are a few mineral workings in this country ; saltpetre is obtained in two localities ; brine springs and lakes yield salt, and copper ore is extracted from mines worked in a primitive fashion.

Netherlands and its Colonies. (See HOLLAND, DUTCH EAST INDIES, AND DUTCH WEST INDIES.)

* "The Resources of Madagascar," *Jour. Soc. Arts*, London, Vol. XLIV., 1896, p. 700.

† *Official Return furnished by the Ministry of Agriculture.*

‡ *Eng. Min. Jour.*, Vol. LXIV., 1897, p. 511.

§ Meakin, "The Mineral Resources of Morocco," *Min. Jour.*, Vol. LXVIII., 1898, p. 1034.

New Caledonia.*

Chrome ore has now taken the place of nickel ore as the most valuable mineral product of New Caledonia. The output in 1896 was 20,186 tons, or more than six times that of 1894. Cobalt mining seems fairly flourishing, and the value of the ore has risen somewhat.

Owing apparently to the competition of the Canadian mines, there has been a great decrease in the amount of nickel ore produced by the French Colony. The output in 1896 was little more than one-fifth of what it was in the previous year.

TABLE 442.

PERSONS EMPLOYED at MINES during the Year 1894.†

	White.	Coloured	Total.
	2,118	536	2,654

TABLE 443.

QUANTITY and VALUE of MINERALS produced during the Years 1895 and 1896.

Mineral.	Percentage of Metal.	1895.		1896.	
		Quantity.	Value.	Quantity.	Value.
Chrome ore	50 (Cr, O ₂)	Metric Tons. 8,079	Francs. 444,345	Metric Tons. 20,186	Francs. 1,110,230
Cobalt ore	3 to 5	4,277	427,700	4,123	412,300
Nickel ore	7 to 10	29,623	1,481,150	6,417	256,680
Total value in francs ...	—	—	2,353,195	—	1,779,210
„ „ £ sterling			94,128		71,168

Norway.

The largest copper mines are those of Sulitelma and Røros,‡ both of which also yield iron pyrites. The Kongsberg mines have long been famous for their native silver, which is sometimes met with in masses of considerable size, and the picked stuff sent to the smelting works contains from 78 to 86 per cent. of the precious metal. The amount of silver obtained by smelting, and derived almost entirely from Kongsberg, was on an average 4,802 kilos. in each of the five years 1891–5. Mica is quarried, and then prepared for stoves, lamp-glasses, and electrical purposes. Marble is likewise one of the exports from Norway.

There appears to be no official information about accidents in mines in Norway, similar to that which is given by the sister country.

* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année, 1896*, p. 76.

† Official Return furnished by the French Government.

‡ *Norges Officielle Statistik, Trædie Række No. 165. Tabeller vedkommende Norges Bergværksdrift i Aarene 1889, og 1890* Kristiania, 1892.

NORWAY—continued.

TABLE 444.

PERSONS EMPLOYED at MINES during the Years 1895 and 1896.*

Kind of Mines.	1895.	1896.
Apatite	?	?
Chrome ore	12	—
Cobalt ore (dressed)	50	40
Copper ore	1,076	1,303
Felspar	?	?
Gold	66	93
Iron ore	8	8
Iron pyrites (in part cupreous)	235	248
Molybdenite	12	15
Nickel ore	20	3
Silver and silver ore	298	225
Titanium ore (rutile)	12	—
Zinc ore	—	52
Total	1,789	1,987

TABLE 445.

QUANTITY and VALUE of MINERALS produced from MINES during the Years 1895 and 1896.*

Mineral.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Kr.	Metric Tons.	Kr.
Apatite	1,601	88,000	1,106	64,000
Chrome ore	190	8,500	—	—
Cobalt ore (dressed)	45	15,000	29	10,000
Copper ore	21,869	810,500	29,910	1,136,000
Felspar	9,780	166,300	12,223	202,000
Gold	—	8,000	—	35,000
Iron ore	1,250	8,700	2,000	14,000
Iron pyrites (in part cupreous)	61,994	910,000	60,507	970,000
Manganese	—	—	20	1,000
Molybdenite	4	8,000	4	6,000
Nickel ore	494	4,000	—	—
Silver and silver ore	490	355,000	527	400,000
Titanium ore (rutile)	28	30,000	30	36,000
Zinc ore	—	—	750	13,000
Total value in Kr....	—	2,412,000	—	2,887,000
„ „ £ sterling...	—	£132,527	—	£158,626

Orange Free State.

This country is remarkable for its diamond mine at Jagersfontein, about 80 miles from Kimberley, which produces gems of the finest water. The Orange Free State also possesses a large area of the South African coalfield

* Official Return furnished by the Central Statistical Office, Kristiania. Figures for 1897 not yet available.

Paraguay.

Though many useful ores and minerals are said to exist in Paraguay, they still remain unworked.

Persia.

The minerals of the country belong to the Government, and the mines are leased out to private persons. The Ministry of Mines has no account of the number of persons employed, nor of quantity and value of the minerals produced.

Judging by the account lately published by Helmhacker,* the mining industry of Persia is of little importance at the present time, in spite of the large resources of the country, which is known to contain deposits of the following useful minerals, viz :—alum, antimony ore, borax, coal, the ores of cobalt, copper, gold, iron and manganese, petroleum, realgar, salt, saltpetre, silver, lead ore, sulphur, and turquoises.

Peru.†

No exact data exist concerning the number of persons employed in mines ; but it is estimated at 80,000, about a tenth part of whom are women.

The number of persons employed in quarries does not exceed 500, and in salt works 2,500.‡

Silver ore is the principal mineral worked in Peru ; the largest mines are at Cerro de Pasco. The total value of the silver and silver ores exported from Peru in the year ending 30th June, 1897, was 10,300,000 soles (£1,030,000).

Among other minerals may be mentioned coal, copper ore, gold, petroleum, and salt.

Extensive beds of anthracite and semi-bituminous coal are reported to exist in the province of Hualgayoc, about 120 miles from the coast. It is proposed to connect the coalfield with the port of Pacasmayo. Lignite and peat are found in several other parts of Peru.

Rich veins of copper ore exist in the Cerro de Pasco silver mines.

The amount of gold obtained from alluvial deposits and quartz veins is small ; on the other hand the production of salt,§ a Government monopoly, is an industry of importance. The total output in 1896 was 168,945 tons.

The famous quicksilver mines of Huancavelica are no longer worked.

Philippine Islands.||

Large quantities of gold have been extracted from alluvial deposits and quartz veins, and it seems likely that gold mining will become a prominent industry of the Islands.

The island of Cebu contains important deposits of lignite, besides veins of argentiferous galena and petroleum.

Copper ore occurs in various places, and has been worked ; iron ore exists in abundance in several of the islands.

* "The Mineral Resources of Persia," *Eng. Min. Jour.* Vol. LXVI., 1898, p. 38.

† *Trade and Finances of Peru for the year 1897*, Consular Report No. 2117, Annual Series, June 1898.

‡ Griffith "Anthracite Coal in Peru," *Min. Jour.* Vol. LXXVI., 1898, p. 696, and *Eng. Min. Jour.* Vol. LXV., 1898, p. 514

§ Official Return furnished by the "Dirección General de Industrias en el Ministerio de Fomento."

Eng. Min. Jour. Vol. LXV., 1898, p. 547.

|| "The Mineral Resources of the Philippine Islands," *Colliery*, Vol. LXXVI., 1898, p. 939.

Karuth, "Notes on the Philippine Islands," London, 1894. Voit, "Goldvorkommen auf den Philippinen," *B. u. h. Zeitung*, Vol. LVII., 1898, p. 251.

Portugal.*

The deposit of copper-bearing pyrites at San Domingos, in Southern Portugal, furnishes most of the mineral wealth of the country at the present time.

TABLE 446.

PERSONS EMPLOYED at MINES during the Years 1896 and 1897.

Year.	Below-ground.			Above-ground.			Gross Total.
	Males.	Females.	Total.	Males.	Females.	Total.	
1896	1,030	—	1,030	1,658	189	1,847	2,877
1897	1,299	—	1,299	1,717	430	2,147	3,446

TABLE 447.

PERSONS EMPLOYED at QUARRIES during the Year 1890.†

Below-ground.			Above-ground.			Gross Total.
Males.	Females.	Total.	Males.	Females.	Total.	
419	—	419	4,240	57	4,297	4,716

TABLE 448.

QUANTITY of MINERALS produced during the Years 1896 and 1897.

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore	595	26,775	417	28,073
Arsenic { crude	—	—	269	6,103
{ refined	—	—	256	14,855
Arsenical pyrites	—	—	20	216
Coal { Anthracite	8,743	16,614	7,996	48,776
{ Lignite	8,000	16,950	9,342	22,421
Copper ore	436	9,754	241	5,986
Copper precipitate	3,453	433,238	3,304	540,290
Cupreous iron pyrites	207,439	337,185	66,473	235,368
Gold	—	—	kilos. 17	11,691
Iron pyrites	—	—	210,265	412,960
Lead ore	1,333	27,997	2,180	65,785
Manganese ore	1,494	13,591	1,652	17,242
Silver	—	—	kilos. 79	1,890
Tin	—	—	1	406
Tin ore	5	700	8	1,955
Wolfram... ..	14	3,371	29	6,733
Total value in dollars	—	886,175	—	1,420,750
" " £ sterling	—	£136,335	—	£218,577

* Official Return furnished by the Portuguese Government.

† No later return available.

PORTUGAL—*continued*.

TABLE 449.

DEATHS from ACCIDENTS at MINES during the Years 1895 and 1896.

Year.	Below-ground.			Above-ground.			Total Below and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1895 	11	—	11	—	—	—	11	3.72
1896 	4	—	4	—	—	—	4	1.39

There were seven deaths from accidents in quarries during the year 1890, giving a death-rate of 1.48 per 1,000 persons employed in that year.

Prussia. (*See GERMAN EMPIRE.*)

Roumania.*

The two most important minerals worked in Roumania are petroleum and rock salt. Roumania is richly supplied with petroleum, but the deposits have at present been worked only on a comparatively small scale. The oil-bearing regions are shown on a map prepared by M. Bokeberg for M. Rommenh  ller's report. The total output is about 100,000 tons yearly, obtained partly from shallow hand-dug wells and partly from bore holes. The Pratova district yields more petroleum than any other at the present time.

The salt industry is a Government monopoly, and much of the work in the rock salt mines is carried on by convict labour. The total annual output of rock salt is 90,000 tons, of which 22,000 are exported to Turkey and 3,000 to Russia.

A little gold is washed from the sands of some of the rivers.

Russia.

Whether judged by the number of persons employed, or by the value of the products obtained, the workings in Russia for coal, gold, iron ore, manganese ore, petroleum, platinum, and salt, are worthy of much attention.

Coal.—The quantity of coal raised in Russia has risen very considerably of late, for the total output in 1882 was $3\frac{3}{4}$ million tons, and $9\frac{1}{2}$ million tons in 1896. The most productive coal region of Russia is the Donetz basin, in the province of Ekaterinoslav, which yields anthracite and bituminous coal. Next in importance comes Poland with true coal and brown coal. These two sources produce about two-thirds of the coal of Russia.

* Rommenh  ller, *La Roumanie*, Rotterdam, 1898.

RUSSIA—continued.

Coal and lignite have been found in many places along the line of the Trans-Siberian Railway now in course of construction.

The coal of Saghalien is being worked on a large scale, and is used for steamships.

Copper.—Most of the copper of Russia comes from the Urals and the Caucasus.

Gold.—The gold is derived mainly from alluvial deposits in the Urals, and in Eastern and Western Siberia, the localities where it is being worked are shown upon a useful map prepared by M. de Batz.*

Iron and steel.—The iron and steel industry of Russia † is making rapid progress, which is evident from a comparison between 1882 and 1896 :—

TABLE 450.

Year.	Quantity Produced.		
	Pig Iron.	Wrought Iron.	Steel.
	Metric Tons.	Metric Tons.	Metric Tons.
1882	462,295	298,361	247,541
1896	1,622,142	498,453	1,023,118
1897	1,868,564	501,819	?

Manganese ore.—The manganese mines of Chiatur, in the district of Kutais in the Caucasus, now furnish about one-half of the world's supply.‡ The rapidly increasing importance of the district is evident from the fact that the export in 1897 amounted to 210,106 tons, compared with 126,630 tons in 1893 ; 68,650 tons of the Caucasian ore were taken by Great Britain last year, and 70,810 tons by Germany.§

Platinum.—All the platinum is obtained from alluvial deposits in the Urals.

Petroleum.—The growth of the petroleum industry has been most astounding ; the output in 1882 was 827,995 metric tons, in 1887, 2,735,550 metric tons, and in 1897, 7,855,582 metric tons, or 8½ times as much as in 1882. In 1887 Russia exported only 193,762 metric tons, whilst in 1897 the exports of petroleum reached 962,850 metric tons.† Reckoning by another unit, the production of the Baku district in 1897 is estimated to have been 44 million barrels, as against 63 million for the whole of the United States.||

According to Mr. Consul Stevens, the exports of petroleum products from Batoum in 1897 reached a total of 932,965 tons. He furnishes other interesting statistics about the petroleum industry ; the average depth of the 670 producing wells at the end of 1897 was 876 feet.¶

Quicksilver.—All the quicksilver is obtained in the district of Ekaterinoslav in South Russia ; the deposits were first worked in 1885.

Salt.—More than half the salt is a harvest from lakes, especially in Astrakhan and the Crimea. Much salt is obtained by evaporating brine pumped up from boreholes, and some by mining beds of rock-salt.

Zinc.—The zinc ore is obtained from deposits of calamine in Poland.

* "The auriferous deposits of Siberia," *Trans. Am. Inst. M.E.*, Vol. XXVIII., 1898.

† Official return furnished by the Department of Mines, St. Petersburg.

‡ Drake, "The Manganese-Ore Industry of the Caucasus," *Trans. Am. Inst. M.E.*, Vol. XXVIII. 1898.

§ *Trade of Batoum and District for the Year 1897.* Consular report, No. 2067, Annual Series, April 1898, p. 8.

¶ Emmons, "Geological excursion through Southern Russia," *Trans. Am. Inst. M.F.*, Vol. XXVIII, 1898.

¶ *Trade of Batoum and District for the Year 1897.* Consular report, No. 2067, Annual Series, April 1898, pp. 18 and 22.

RUSSIA -- *continued.*

TABLE 451.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1895 and 1896.*

Year.				Below-ground.	Above-ground.	Total.
1895	...	...	...	75,231	165,624	240,855
1896	...	...	...	82,843	156,591	239,434

TABLE 452.

PERSONS EMPLOYED at the PRINCIPAL KINDS of MINES and other MINERAL WORKINGS during the Years 1895 and 1896.*

Kind of Mineral worked.	Persons Employed during the Year.	
	1895.	1896.
Coal	51,215	53,530
Copper ore	3,804	3,263
Gold	82,325	72,508
Iron ore	34,997	38,210
Manganese	3,359	2,562
Naphtha	7,121	11,727
Platinum	5,628	6,981
Salt	20,111	16,338
Silver-lead ore	4,413	1,915

TABLE 453.

PERSONS EMPLOYED at GOLD MINES during the Years 1895 and 1896.*

Year.			Number of Persons Employed.				
			Urals.	West Siberia.	East Siberia.	Finland.	Total.
1895	...	...	36,182	10,632	35,438	73	82,325
1896	...	...	33,415	8,057	30,965	71	72,508

* Official return furnished by the Department of Mines, St. Petersburg.

RUSSIA—continued.

TABLE 454.

QUANTITY and VALUE of MINERALS produced during the Years 1895 and 1896, and the QUANTITY only for 1897.*

Mineral.	District whence Obtained.	1895.		1896.		1897.†
		Quantity.	Value.	Quantity.	Value.	Quantity.
		Metric Tons.	Roubles Silver.	Metric Tons.	Roubles Silver.	Metric Tons.
Asbestos	Ural	1,131	17,000	1,275	20,000	—
Asphalt and mineral pitch ..	Syzran, Caucasus	18,809	358,855	18,188	332,853	—
China clay	Volyn, Chernigov	25,350	253,000	6,104	60,000	—
Chrome ore	Perm, Orenburg, Oufa ..	2,101	13,060	6,687	40,780	—
Coal { Anthracite Coal Lignite	{ Donetsk, Poland, Moscow, Ural, Kutais, Turkestan, Tomsk, Kirghiz Steppe, Saghalien, Oussoury. }	{ 722,129 8,250,582 133,231 }	{ — 30,376,000 — }	{ 796,448 8,527,994 60,806 }	{ — 31,435,000 — }	{ — 11,207,475 — }
Cobalt ore and regulus ..	Caucasus	3	—	4	—	—
Copper	Ural, Western Siberia, Caucasus, Finland.	5,858	3,573,790	5,901	3,560,190	6,567
Gold	Ural, Eastern and Western Siberia, Lapland.	Kil. 41,143	31,330,685	Kil. 37,240	42,073,642	Kil. 38,129
Iron { Pig iron Wrought iron .. Steel	{ Ural, Central Russia, Poland, Southern Russia, Northern Russia, Siberia, Finland. }	{ 1,453,520 440,748 878,771 }	{ 55,782,000 — — }	{ 1,622,142 498,453 1,023,118 }	{ 62,178,700 — — }	{ 1,868,564 — — }
Iron pyrites	Ural, Toula, Novgorod ..	12,690	78,000	13,200	80,500	—
Lead	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Turkestan.	412	50,000	261	30,000	—
Manganese ore	Kutais, Ural, Ekaterinoslav	203,247	971,306	208,197	1,184,323	366,806
Petroleum	Caucasus, Transcaspian, Turkestan.	6,961,481	28,727,000	7,066,232	33,621,136	7,855,582
Phosphorite	Bessarabia, Kostroma, Podolia, Smolensk.	6,496	46,700	3,780	23,000	—
Platinum	Ural	Kil. 4,414	2,209,900	Kil. 4,934	2,408,000	Kil. 5,806
Quicksilver	Ekaterinoslav	434	927,500	492	1,050,000	616
Salt { Rock salt Lake salt Salt from brine ..	{ Astrakhan, Perm, Ekaterinoslav, Crimea, Kharkov, Orenburg, Tomsk, Caucasus, &c. }	{ 316,473 851,814 373,170 }	{ — 5,959,358 — }	{ 340,421 852,433 354,488 }	{ — 7,565,000 — }	{ — 1,526,622 — }
Silver	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Finland.	Kil. 7,895	573,000	Kil. 7,819	568,000	—
Sulphate of sodium	Tiflis, Kuban, Tomsk, Volodga.	4,211	39,030	5,415	28,600	—
Sulphur	Daghestan, Turkestan ..	190	5,790	437	14,000	—
Tin	Finland	20	12,670	2	1,190	—
Zinc	Poland	5,033	900,000	6,261	1,145,000	5,879
Total value in roubles ..		—	{ 162,204,654 }	—	{ 187,420,233 }	—
" " £ sterling ..		—	{ £25,746,770 }	—	{ £29,749,243 }	—

TABLE 455.

QUANTITY of IRON ORE produced in each District in 1895 to 1896.*

Region.	1895.		1896.	
	Number of Mines.	Quantity produced.	Number of Mines.	Quantity produced.
		Metric Tons.		Metric Tons.
Urals	603	1,215,597	651	1,346,273
Central Russia	83	167,930	78	173,142
South Russia	22	969,151	40	1,258,797
Poland	107	357,439	109	296,482
Siberia	10	22,330	10	27,594
North Russia	10 and 26 lakes	16,970	7 and 22 lakes	22,903
Finland	173 "	64,927	2 " 129 "	75,631
Caucasus	2	5,023	4	5,179
Total ... {	837 and 199 lakes	{ 2,819,367 }	901 and 151 lakes	{ 3,206,001 }

* Official returns furnished by the Department of Mines, St. Petersburg.

† Preliminary data subject to revision.

RUSSIA—*continued.*

TABLE 456.

DEATHS from ACCIDENTS at the MINES and other WORKINGS for MINERALS
during the Years 1894 and 1895.*

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1894	299	1.29
	1895	233	0.96

Saxony. (*See* GERMAN EMPIRE.)St. Martin. (*See* DUTCH WEST INDIES.)

Senegal. †

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives.

Servia. ‡

Most of the coal region of Servia lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are in the neighbourhood of Posarevatz.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley near Tschuka.§

TABLE 457.

PERSONS EMPLOYED at MINES during the Years 1895 and 1896.

Year.	Below-ground.			Above-ground.			Gross Total.
	Males.	Females.	Total.	Males.	Females.	Total.	
1895	—	—	—	—	—	—	1,391
1896	—	—	—	—	—	—	1,433

In addition to the above, there were 120 persons employed in and about quarries.

TABLE 458.

QUANTITY and VALUE of MINERALS produced during the Years 1895 and 1896.

Mineral.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony (regulus)	48	33,281	—	—
Brown coal	41,008	238,007	50,635	470,946
Coal... ..	1,426	53,107	11,726	90,020
Copper (metal)	156	18,579	113	141,432
Lead do.	7	2,948	462	19,879
Lignite	19,537	100,046	24,705	127,912
Millstones	619	21,600	855	37,600
Zinc ore	8	?	—	—
Total value in francs	—	Francs 467,568	—	Francs 887,789
„ „ £ sterling	—	£18,703	—	£35,511

* Official return furnished by the Department of Mines, St. Petersburg.

† *Min. Jour.*, Vol. LXVIII., 1898, p. 221.

‡ Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce, and Industry, Belgrade.

§ *Berg-und huettenmaennische Zeitung*, Vol. LV., 1896, p. 299.

SERVIA—*continued.*

TABLE 459.

DEATHS from ACCIDENTS at MINES during the Year 1895 and 1896.

Year.	Below-ground.			Above-ground.			Gross Total.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1895	—	—	—	—	—	—	4	2·88
1896	—	—	—	—	—	—	4	2·79

Siam.*

Siam produces gems, gold, and tin ore. The gems, rubies and sapphires, are obtained from shallow diggings on the flanks of the Patat range in the Cambodian peninsula. The gem pits afford employment to five or six thousand Shans and Laos, and the value of the output is estimated to be about £300,000 annually. Alluvial gold exists and has been worked in many parts of Siam, notably near Lophburi; reef-mining has been carried on at Kabin and Wattana, and satisfactory returns are expected from the former mine at an early date. At the present time the country is but a small producer of the precious metal.

The tin mines of the State are chiefly situated along the edge of the granites of the main ridge which form the boundary between Langsuan and its eastern neighbour Renawng.† The total output of metallic tin for 1897 may be estimated at 4,000 tons, giving employment to about 16,000 persons, mostly Chinese.

Singkep. (See DUTCH EAST INDIES.)

South African Republic.‡

The South African Republic is now the greatest gold-producing country of the world, and its mineral resources are by no means confined to the precious metal; it is also yielding coal, diamonds, silver-lead ore, and tin ore; whilst the ores of antimony, cobalt, copper, mercury, and zinc are known to exist.

Coal is worked chiefly in the Boksburg district, and the output is increasing gradually.§

Diamonds.—There are alluvial diggings close to Christiana, and a “pipe” of “blue ground” similar to that of Kimberley has been discovered at Rietfontein, near Pretoria. The number of persons engaged in searching for diamonds is rapidly increasing.

* M.S. communication from H. Warington Smyth and Bel, “Aperçu sur les gîtes minéraux de l’Indo-Chine Centrale,” *Bull. Soc. Ind. Min.*, Vol. XII., 1898, p. 384.

† H. Warington Smyth, “East Coast States of Siam,” *The Geographical Journal*, Vol. XI., 1898.

‡ *Rapport van het Hoofd van Mijnwezen over het Jaar, 1897*, Pretoria, 1898; and translation: *Report for the year ending 31st December 1897, as presented by the State Mining Engineer to the Government of the South African Republic*, Pretoria, 1898.

§ Peile, “Transvaal Coalfield,” *Trans. Inst. M.E.*, Vol. XVI., 1898, p. 20, with a map.

SOUTH AFRICAN REPUBLIC—*continued.*

Gold.—All other industries in the South African Republic are eclipsed by gold mining. The steady and rapid increase in the gold production of the country becomes evident when one scans the figures in the following table:—

TABLE 460.

Year.	Value in £ sterling.	Increase on Previous Year £ sterling.
1884	10,096	—
1885	6,010	—
1886	34,710	28,700
1887	169,401	134,691
1888	967,416	798,015
1889	1,490,568	523,152
1890	1,869,645	379,077
1891	2,924,305	1,054,660
1892	4,541,071	1,616,766
1893	5,480,498	939,427
1894	7,667,152	2,186,654
1895	8,569,555	902,403
1896	8,603,821	34,266
1897	11,653,725	3,049,904
Total	53,987,973	—

The total output of fine gold in 1897, as calculated from the value, was 2,748,520 ozs., exceeding that of the previous year by 719,318 ozs., worth £3,049,904. The output for the current year will exceed 4 million ounces of fine gold.

The Witwatersrand goldfield, with its remarkable beds of auriferous conglomerate, contributed 91½ per cent. of the total for 1897.

The following summary, taken from Mr. Evans' report,* contains useful facts concerning the present position of the gold mining industry on the Rand:—

TABLE 461.

WITWATERSRAND GOLDFIELD.

	1896.	1897.
Average number of producing companies	44	52
Average number of stamps employed	2,949	3,567
Total tonnage crushed	4,011,697 tons.	5,325,355 tons.
Amount milled per stamp head in 24 hours†	4·26 tons.	4·42 tons.
Total yield	2,280,892 ozs.	3,034,678 ozs.
Total value	£7,864,341	£10,583,616
Average yield per ton	11·12 dwts.	11·39 dwts.
Value per ton	£1 19s. 2d.	£1 19s. 9d.
Number of producing mines paying dividends	23	27
Total amount of dividends paid	£1,638,881	£2,713,580
Proportion of dividends paid to total value of output	20·8 %	25 %
Amount of dividend paid per ton crushed	8s. 2d.	10s.

* *Consular Report on the Trade, Commerce, and Gold Mining Industry of the South African Republic for the year 1897* [C.—9093], price 3d.

† *Report of the State Mining Engineer for the year 1897, Pretoria. 1898, p. 6.*

SOUTH AFRICAN REPUBLIC—continued.

Silver-lead ore.—After a long cessation the mining of argentiferous lead ore has again been resumed.

Tin ore.—Tin has been produced from alluvial deposits on the Ryan Concession, Swaziland. The total output was 69·7 tons of clean tin ore containing 75 per cent. of metal.

The following tables show the vast importance of the mining industry of the South African Republic:—

TABLE 462.
PERSONS EMPLOYED at all the GOLD MINES in 1896 and 1897.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.
	Whites.	Natives.	Total.	Whites.	Natives.	Total.	
1896	8,006	57,313	65,319	1,369	6,699	8,068	73,387
1897	7,961	62,009	69,970	1,569	7,118	8,687	78,657

TABLE 463.
PERSONS EMPLOYED at COAL MINES in 1896 and 1897.

Year.	Below-ground.		Above-ground.		Total.	
	Whites.	Natives.	Whites.	Natives.	Whites.	Natives.
1896	160	3,526	283	2,119	443	5,645
1897	159	3,917	313	2,744	472	6,661

TABLE 464.
QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
Coal	Metric Tons. 1,494,798	£ 612,561	Metric Tons. 1,625,892	£ 612,668
Diamonds	carats 814	1,628	carats 5,792	11,500
Gold	kilos. 63,115 ozs. 2,029,202*	8,603,821	kilos. 85,488 ozs. 2,748,520	11,653,725
Silver-lead ore	—	—	254	Not given.
Tin ore	240	Not given.	70	2,760
Total value	—	9,218,010	—	12,280,653

About two-thirds of the total value of the gold were obtained from the stamp mills and one-third by chemical means, such as the cyanide, chlorination and other processes. The cyanide process was applied not only to tailings and concentrates, but also to 114,498 tons of ore crushed dry.

* Quantity estimated from the value, taking 1 oz. of fine gold as worth 84·8s.

SOUTH AFRICAN REPUBLIC—*continued.*

TABLE 465.

QUANTITY and VALUE of FINE GOLD produced during the Years 1896 and 1897.

How obtained.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
	Ozs.	Kilos.	£	Ozs.	Kilos.	£
Free gold in milling ...	1,381,248	42,961	5,856,492	1,807,025	56,205	7,661,786
Chemical treatment :—						
Tailings ...	528,633	16,443	2,241,405	722,652	22,477	3,064,044
Concentrates ...	93,783	2,917	397,641	118,069	3,672	500,612
Dry process ...	16,117	501	68,329	29,168	907	123,673
Miscellaneous ...	8,523	265	36,139	70,995	2,208	301,018
From alluvial deposits ...	899	28	3,815	611	19	2,592
Total ...	2,029,203*	63,115	8,603,821	2,748,520*	85,488	11,653,725

TABLE 466.

DEATHS from ACCIDENTS at COAL MINES and GOLD MINES during the Years 1896 and 1897.

Kind of Mines.	1896.		1897.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal ...	21	3.45	30	4.21
Gold ...	368	4.95	339	4.31

All these death-rates are high.

TABLE 467.

DEATHS from ACCIDENTS at COAL MINES, classified according to CAUSE of ACCIDENT, during the Years 1896 and 1897

Cause of Accident.	1896.			1897.		
	Persons Killed.			Persons Killed.		
	White.	Native.	Total Number of Deaths.	White.	Native.	Total Number of Deaths.
Explosives ...	—	3	3	—	2	2
Machinery ...	—	1	1	1	3	4
Falls of rock (in stopes, &c.) ...	—	6	6	—	16	16
Falling materials, &c. (in shafts, &c.) ...	—	1	1	—	—	—
Trucks and tramming ...	—	3	3	—	2	2
Ascent or descent in cages or skips ...	—	7	7	—	3	3
" " " by ladders ...	—	—	—	—	—	—
Falling in shafts ...	—	—	—	—	3	3
Miscellaneous ...	—	—	—	—	—	—
Total ...	—	21	21	1	29	30

* Quantity estimated from the value, taking 1 oz. of fine gold as worth 84.8s.

SOUTH AFRICAN REPUBLIC—continued.

TABLE 468.

DEATHS from ACCIDENTS at all the GOLD MINES, classified according to CAUSE of ACCIDENT, during the Years 1896 and 1897.

Cause of Accident.	1896.			1897.		
	Persons Killed.			Persons Killed.		
	White.	Native.	Total Number of Deaths.	White.	Native.	Total Number of Deaths.
Explosives	15	88	103	11	42	53
Machinery	7	20	27	4	20	24
Falls of rock (in stopes, &c.)	1	54	55	—	61	61
Falling materials, &c. (in shafts, &c.)...	1	14	15	2	4	6
Trucks and tramways	—	10	10	1	13	14
Ascent or descent in cages or skips	19	61	80	12	62	74
" " by ladders	—	4	4	—	4	4
Falling in shafts	12	39	51	6	30	36
Suffocation by gases	—	—	—	9	48	57
Miscellaneous	10	13	23	1	9	10
Total	65	303	368	46	293	339

Of the 57 deaths from suffocation by gases, 37 resulted from an explosion of dynamite in the Langlaagte Deep Mine; in consequence of the shaft not being connected with its twin shaft, and the destruction of the air compressors as well as the means of exit by the explosion, the men were asphyxiated by the dynamite fumes.

The State engineer remarks that the number of accidents from explosives has diminished, owing to the regulations which prohibit blasting operations from being carried on except by persons possessing a certificate of competency.

The mines in the South African Republic are now governed by "Law No. 12, 1898," which contains a very comprehensive code of regulations, well deserving the study of mining engineers in this country.

The ventilation rule is as follows:—"Every mine must constantly be supplied with a sufficient current of fresh air.

"For every person working underground not less than 2 cubic metres (70½ cubic feet) of fresh air per minute must be transmitted, and as much more as the circumstances may demand." (Article 52.)

Persons doing any blasting must have a certificate for blasting work. (Article 87.)

Engine drivers must be certificated. (Article 104.)

Articles 106 to 121 contain useful regulations about mine plans, which have to be made by Surveyors of Mines admitted by Government.

Every mine employing more than 30 persons must be under the control and responsibility of a Chief Superintendent (Article 167), who has to hold a "certificate of proficiency" given by the State Mining Engineer upon the recommendation of a Board of Examiners. Candidates for examination must be at least 23 years of age, and must have had "practical experience in mines for at least five years. Persons, however, who can show, to the satisfaction of the Examiners, that they have completed with success the course of a recognised school or academy of mines, are exempted from two years out of the five years above referred to."

SOUTH AFRICAN REPUBLIC—*continued.*

What appears to correspond to the Second Class Certificate under the Coal Mines Act in this country is the "Mine Superintendent's Certificate" (Article 183). This certificate is likewise obtained by examination after the candidate has shown that he "has had at least four years' practical experience in mining work, and that he, during at least one year, has had the chief or under supervision of the underground works of a mine."

"Persons who, however, can prove to the satisfaction of the Examiners that they have successfully attended a course of instruction in an acknowledged school or academy of mines, are exempted from two of the above-mentioned four years.

"He shall pass a verbal examination regarding ventilation, timbering, and the working of mines generally, and must furnish proof of his experience, ability, sobriety, and good conduct in general.

"The Examiners may grant exemption from the one year's supervision over mine works when the applicant has proved to their satisfaction that he is quite able to carry out the duty of a Superintendent of Mines." (Article 184.)

Spain.

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrites than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality.

The province of Oviedo yields more than half the coal, and the province of Huelva, with the Rio Tinto mine and its neighbours, is by far the greatest producer of copper ore. The total output of iron ore was more than $\frac{1}{2}$ a million tons in excess of that of 1896. About 70 per cent. of the production came from the celebrated mines, or rather quarries, near Bilbao in the province of Biscay. England, France, and other countries are all glad to draw supplies of red and brown hematite and spathose ore from these rich and easily worked deposits. Santander, Murcia, Almeria, and Seville, are next in importance to Biscay as iron-producing provinces, though so far behind in productiveness as in no way to rival it; however, Murcia heads the list with its large output of argentiferous lead ore, and Jaen with the mines near Linares is likewise remarkable for its lead ore. Cinnabar, the heavy red ore of mercury, naturally attracted attention at a very early date, and the world-renowned Almaden mine in the province of Ciudad Real has been worked from time immemorial. Most of the salt is obtained from salt marshes, especially in the vicinity of Cadiz. Tin-mining is of little importance; nearly the whole of the ore obtained during the past year came from the province of Zamora. Nearly half the zinc ore is produced by the province of Santander, where there are deposits of calamine and blende.

TABLE 469.

PERSONS EMPLOYED at MINES during the Years 1896 and 1897.*

Year.			Men.	Women.	Boys.	Total.
1896	...	...	53,674	2,107	7,187	62,968
1897	...	...	55,881	2,430	7,684	65,995

* *Estadística Minera de España* for 1896 and 1897, Madrid, p. 24.

SPAIN—continued.

TABLE 470.

PERSONS EMPLOYED in the PRINCIPAL MINING INDUSTRIES during the Years 1896 and 1897.*

Kind of Mines.	1896.				1897.			
	Men.	Women.	Boys.	Total.	Men.	Women.	Boys.	Total.
Brown coal (lignite) ...	521	33	75	629	508	21	99	628
Coal and anthracite ...	14,033	924	2,322	17,279	11,765	928	2,256	14,949
Copper ore and cupreous pyrites.	7,988	222	973	9,183	7,340	184	886	8,410
Iron ore ...	14,294	97	1,072	15,463	15,895	151	1,371	17,417
Lead ore ...	10,905	457	1,815	13,177	13,268	498	2,021	15,787
Quicksilver ore ...	1,673	2	134	1,809	1,874	2	149	2,025
Zinc ore ...	896	37	77	1,010	1,225	159	138	1,522
Other mines ...	3,364	335	719	4,418	4,006	487	764	5,257
Total ...	53,674	2,107	7,187	62,968	55,881	2,430	7,684	65,995

TABLE 471.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897.*

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Aluminous earths ...	320	8,000	409	10,232
Antimony ore ...	54	6,925	354	33,590
Anthracite ...	14,895	133,938	8,758	78,725
Asphalt (rock) ...	1,117	11,170	1,656	16,562
Barium sulphate ...	345	8,600	429	12,245
Brown coal ...	55,413	301,304	54,232	270,133
China clay ...	1,240	12,234	6,294	33,585
Coal ...	1,852,947	14,033,269	2,010,960	17,048,179
Cobalt ore ...	18	9,000	13	17,000
Copper ore ...	157,365	732,978	18,488	179,612
Copper and cobalt ores ...	992	119,040	—	—
Cupreous iron pyrites...	2,200,919	11,029,213	2,161,182	10,624,464
Fluor spar ...	3	225	2	180
Gold ore...	—	—	450	9,250
Gold and silver ore ...	854	15,280	2,006	40,116
Iron ore ...	6,762,582	25,067,020	7,419,768	27,286,637
Iron pyrites ...	100,000	250,000	100,000	250,000
Lead ore...	104,160	9,424,036	110,469	10,293,057
Lead ore, argentiferous ...	182,565	30,605,864	186,692	18,675,064
Lead and zinc ores ...	400	2,000	40	200
Manganese ore ...	38,265	268,662	100,566	681,251
Mineral waters...	15,738,142	462,425	16,180,585	579,368
Nickel ore ...	100	4,150	—	—
Ochre ...	212	4,250	200	4,000
Phosphorite ...	770	15,400	2,084	83,360
Quicksilver ore...	34,959	6,886,980	32,378	6,642,215
Salt ...	521,751	5,769,399	508,606	5,796,472
Silver ore ...	1,230	649,714	982	508,984
Silver ore, ferruginous ...	3,581	17,907	5,559	96,734
Steatite ...	756	5,829	3,601	106,704
Sulphur rock ...	26,204	227,167	18,845	162,938
Tin ore (undressed) ...	2,348	29,540	2,378	28,974
Topaz ...	kilos. 80	64,300	kilos. 44	3,755
Tungsten ore (Wolfram) ...	31	7,800	10	1,545
Zinc ore ...	64,828	2,038,351	73,848	1,819,230
Total values in Pesetas ...	—	108,221,970	—	101,394,361
" " " £ sterling ...	—	4,328,878	—	4,055,774

* *Estadística Minera de España* for 1896 and 1897, Madrid, p. 24.

SPAIN—*continued.*

TABLE 472.

DEATHS from ACCIDENTS at MINES during the Years 1896 and 1897.*

Year.	Number of Deaths by Accidents.	Number of Persons seriously Injured.	Death-rate per 1,000 Persons Employed.
1896	123	242	1·95
1897	142	258	2·15

TABLE 473.

DEATHS from ACCIDENTS at MINES, classified according to CAUSE, during the Years 1896 and 1897.*

Cause.	1896.		1897.	
	Number of Deaths by Accidents.	Percentage of Total.	Number of Deaths by Accidents.	Percentage of Total.
Falls of ground	25	20·3	40	28·2
Explosions of firedamp	15	12·2	8	5·6
Blasting	7	5·7	5	3·6
Suffocation by gases	9	7·3	15	10·6
Irruptions of water	—	—	—	—
Falling down shafts	12	9·8	16	11·2
Breaking of machinery, &c.	17	13·8	8	5·6
Miscellaneous	38	30·9	50	35·2
Total	123	100·0	142	100·0

Straits Settlements.

Apparently there is little, if any, mining in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore; but the adjacent Federated Malay States are great producers of tin ore (*see* p. 299).

Sumatra. (*See* DUTCH EAST INDIES.)

Surinam. (*See* DUTCH GUIANA.)

Sweden.†

Coal.—All the coal mines are in Scania, the most southerly province of the kingdom. The seams, which are of Rhætic age, are interstratified with beds of fire-clay, and the two minerals are worked together.‡ The thickness of the coal seams, including the partings of shale, varies from three to five feet.

* *Estadística Minera de España* for 1896 and 1897, Madrid, pp. 26 and 27.† *Bidrag till Sveriges Officiella Statistik för år 1897*, Stockholm, 1898.‡ Nordenström, *L'industrie minière de la Suède*, Stockholm, 1897.

SWEDEN—continued.

Copper.—The well-known Stora Kopparberg mine close to Falun furnishes most of the copper of Sweden, as well as some of the gold.

Iron ore.—Sweden, which has long been famous as an iron-producing country, is likely to furnish important supplies of ore to this country in the near future, when the vast deposits in the province of Norrbotten, within the Arctic Circle, are rendered available for export at all seasons of the year by railway communication with the west coast of Norway. At the present moment the Gellivare mines, which are connected by rail with the port of Luleå on the Gulf of Bothnia, are already furnishing about 600,000 tons a year, or nearly one-third of the total output of iron ore in Sweden. Still further north lie the deposits of Kiirunavaara and Luossavaara, which, according to Lundbohm* “are the largest individual deposits of the kind in Scandinavia, while in all Europe and America their rivals in size are few in number; they consist principally of magnetite, and the remaining part is also magnetic, though here mixed with hæmatite.”

Lundbohm's useful little map shows the course of the proposed railway from Gellivare, to Kiirunavaara, Luossavaara, and Victoria-harbour on the Ofoten-fjord, in latitude 68° 30' N.

Peat.—The table of production takes no account of either the peat diggings or of the stone quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould.

Stone.—Granite, using the word in its commercial sense, is quarried on the west coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden.

Portland cement is manufactured in several places, and the total annual production is about 335,000 casks.

Zinc.—The Ämmeberg mines supply most of the zinc ore, which is exclusively blende.

TABLE 474.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1896 and 1897.

Year.	Kind of Workings.	Below-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1896	Coal mines	1,134	120	1,254	335	36	371	1,625
„	Iron „	3,441	105	3,546	3,950	943	4,893	8,439
„	Other „	821	5	826	752	454	1,206	2,032
„	Feldspar quarries ...	59	—	59	91	55	146	205
	Total for 1896 ...	5,455	230	5,685	5,128	1,488	6,616	12,301
1897	Coal mines	1,127	86	1,213	384	32	416	1,629
„	Iron „	3,484	136	3,620	4,232	945	5,177	8,797
„	Other „	926	3	929	667	401	1,068	1,997
„	Feldspar quarries ...	95	1	96	81	81	162	258
	Total for 1897 ...	5,632	226	5,858	5,364	1,459	6,823	12,681

* The iron-ore fields at Kiirunavaara and Luossavaara in the Province of Norrbotten, Stockholm, 1898.

SWEDEN—*continued.*

TABLE 475.

QUANTITY of MINERALS obtained from MINES and FELDSPAR QUARRIES during the Years 1896 and 1897.

Mineral.	Year.			
	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum	334	36,480	131	14,170
Coal	225,848	1,614,413	224,343	1,610,037
Cobalt ore	—	—	kil. 700	9,100
Copper ore	24,351	307,909	25,207	343,377
Copper, sulphate	1,506	390,000	1,315	368,000
Feldspar	12,789	145,989	19,298	199,972
Fire clay... ..	120,426	185,357	112,283	180,262
Gold ore... ..	736	21,900	1,662	34,126
Graphite	kil. 13,946	1,820	kil. 99,170	12,000
Iron ore	2,039,019	9,331,997	2,087,166	10,007,410
Iron pyrites	1,009	10,794	517	5,542
Iron, sulphate	191	9,198	231	11,982
Manganese ore	2,056	26,855	2,749	47,075
Manganese ore in powder	—	—	343	16,464
Silver and lead ore	15,381	278,710	10,068	233,791
Sulphur	77	6,000	—	—
Zinc ore	44,041	1,224,956	56,636	1,462,007
Total value in crowns	—	13,592,378	—	14,555,315
„ „ £ sterling	—	746,834	—	799,742

TABLE 476.

PERSONS KILLED and INJURED by ACCIDENTS at MINES and FELDSPAR QUARRIES during the Years 1896 and 1897.

Year.	Number of Persons Killed.	Number of Persons Injured.*	Death-rate per 1,000 Persons Employed.
1896†	19	242	1.54
1897	12	299	.95

The Laws‡ which regulate the working of Mines in Sweden at the present time are as follows :—

1. The Mining Code of the 16th May, 1884, by which every Swedish citizen is entitled to claim deposits which contain (A) the ores of the following metals: gold, silver, platinum, mercury, lead, copper, iron (excepting the iron ore from lakes and marshes), manganese, chromium, cobalt and nickel, zinc, titanium, molybdenum, tungsten, bismuth, antimony, and arsenic, as well as (B) iron pyrites, magnetic pyrites and graphite.
2. The Law of the 28th May, 1886, upon the search for and working of coal, according to which it is necessary in order to work mines of coal to obtain the concession of them from the King.

* Injuries causing absence from work for 14 days at least.

† Corrected figures.

‡ *Bidrag till Sveriges Officiella Statistik C. Bergshandteringen*, Stockholm, 1897, p. xx.

Switzerland.*

That the mineral industries of Switzerland are of little importance is evident from the following tables ; nevertheless the kinds of mineral which are being obtained from underground workings are numerous, viz.: anthracite, bituminous limestone, brown coal, cobalt and nickel ore, fireclay, gold ore, graphite, gypsum, iron ore, limestone, magnesium sulphate, marble, marl, potstone, salt, sandstone, and slate. The Federal Inspector of Mines, who has kindly supplied certain figures, does not receive official returns of output, nor does his province extend to all open workings and brine springs. Consequently the picture of the mineral industries contained in his report is not complete, though full of interesting details.

The largest mine is the Delsberg iron mine with 136 workmen, whilst the largest quarry, which is worked for sandstone, employs 170 ; the underground quarry for bituminous limestone at Val de Travers, the most profitable of all Swiss mining enterprises, affords occupation to 83 persons, and the salt mine at Bex to 39.

With reference to the Swiss brown coal, which is of Miocene Age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure.

TABLE 477.

NUMBER OF PERSONS EMPLOYED at MINES and UNDERGROUND QUARRIES during the Year.

Kind of Workings.	Number of Works.	Number of Persons Employed.
Mines	20	459
Underground quarries	107	1,405
Total	127	1,864

TABLE 478.

QUANTITY of MINERALS produced during the Year 1896.

Mineral.	Year.
	1896.
	Metric Tons.
Anthracite	—
Bituminous limestone	25,000
Brown coal	—
Cement (Portland)	132,730
„ (Roman)	15,320
Cobalt and nickel ore... ..	—
Fireclay	—
Gold ore	—
Graphite	—
Gypsum	51,507
Iron ore	12,000
Lime (hydraulic)	208,528
Magnesium sulphate	—
Marble	—
Marl	—
Potstone	—
Pozzolana	9,000
Salt (Bex mine and brine springs)	45,292
Sandstone	—
Slate	—

* *Rapports des Inspecteurs Fédéraux des Fabriques et des Mines dans les années 1896 et 1897. Aarau, 1898.*

SWITZERLAND—continued.

TABLE 479.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1896 and 1897.

Kind of Workings.	1896.		1897.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines	1	2.18	2	4.36
Underground quarries	6	4.27	7	4.98

Among the dangers which threaten the Swiss miner, avalanches must not be forgotten. According to the Federal Inspector no less than 14 separate mines have this risk before them. Many years ago 15 workmen at a mine were overwhelmed at once by an avalanche; fortunately they were all rescued alive.

Two mines are lit with the electric light, and acetylene gas is being tried in two others.

The Belgian wire saw is in use at a Swiss marble quarry, as at Carrara, both for cutting out blocks from the face and for subdividing them afterwards.

Tong-King. (See INDO-CHINA.)

Tunis.*

Tunis cannot be called an important mining country at the present time.

Phosphate of lime.—This mineral is found at the base of the Eocene rocks, especially in the mountain chain running from Gafsa to Tamerza, where the beds may be followed for a distance of about 40 miles. The crude rock contains from 55 to 60 per cent. of phosphoric acid.

A railway, 128 miles in length, is in the process of construction, and it is expected that by the end of this year the regular export of the fertilizer will have commenced.

Salt.—This mineral is obtained from salt marshes and lakes, especially at Rhadès. The salt-pans worked by the State produced about 8,000 tons in 1897 at a cost of 2fr. 40c. the ton.

An important salt lake at La Soukhra, near Tunis, fed by salt-water from the sea and covering an area of more than 15 square miles, becomes completely dried up in summer, and leaves a deposit of salt from 2 to 6 inches in thickness. This immense source of salt has lately begun to be utilized for export purposes.

Zinc ore.—Calamine is worked in several places, and after being calcined is shipped to France and Belgium.

* *La Tunisie à l'Exposition internationale de Pêche de Bergen, Tunis, 1898.*

TUNIS—continued.

TABLE 480.

QUANTITY and VALUE of MINERALS produced during the Years 1895 and 1896.*

Mineral.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Gypsum <i>Metric Cubes</i>	—	—	4,700	—
Marble	—	—	1,000	—
Phosphate of lime	—	—	1,000	—
Salt from marshes and salt lakes	8,000	36,000	5,500	110,000
Stone (dressed for building) ... <i>Metric Cubes</i>	—	—	18,000	—
„ (broken)	—	—	135,000	—
Zinc ore	14,800	563,000†	12,100	593,000

Turkey.‡

The mineral resources of the Ottoman Empire are great, but almost entirely undeveloped. No official statistics are published.

Alum.—A little alum is manufactured.

Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895.

Arsenic.—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly; both orpiment and realgar are mined in Macedonia.

Asphalt.—This mineral is being mined near Salonica, and it is known to exist in other places.

Boracite.—Borate of calcium, known in the trade as boracite, and to mineralogists as pandermite, is worked near the port of Panderma in Asia Minor. The annual output is from 10,000 to 11,000 tons.§

Chrome ore.—Chromite, which occurs in irregular bunches in serpentine, is now the most important mineral raised in Turkey. The annual output is about 3,000 tons.

Coal.—The only coal mines deserving mention at the present time are near Eregli, the ancient Heraclea. Bituminous coal and lignite are known in other parts of the Empire. The output is estimated to be about 176,000 tons annually.§

Copper.—Copper ores have been worked in various places; nowadays the output is extremely small.

Emery.—This mineral was discovered in Asia Minor about fifty years ago; 8,400 tons were shipped from Smyrna in 1895.

Fuller's earth is quarried on a large scale near Angora.§

* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1895*, p. 65, et pour l'année 1896, p. 77.

† Value of 10,800 tons only.

‡ Helmhacker, "The Useful Minerals of Turkey," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 635.

§ *Oest. Zeitsch. f. B. u. Hüttenwesen*, Vol. XLIV., 1897, p. 223.

TURKEY—*continued.*

Gold.—A little alluvial gold is obtained in Thessaly and in some of the valleys of Macedonia. The river Pactolus, so famous in ancient times, no longer yields gold.

Iron.—The deposits of iron ore which were utilized in former days have ceased to be worked.

Manganese.—There are manganese mines in Macedonia and in Asia Minor.

Meerschaum.—Mining meerschaum is an industry of some importance near Broussa in Asia Minor, where sometimes 1,000 men are employed.* The output is about 60 tons of clean meerschaum yearly.

Petroleum.—No attempt has been made to ascertain the value of the oil springs known in old Servia, near Broussa, and in Armenia.

Salt.—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. The rock salt mines are worked near Van in Armenia. 203,128* tons of salt were produced in the year 1893–4.

Silver-lead.—Deposits of argentiferous galena appear to be worked on a small scale at Edremid and near Adana.

United States.

With the exception of the British Isles, the United States are the largest producers of coal in the world.

Coal.—The total production of coal in 1897 was 181,638,161 metric tons,† of which 47,565,327 tons were anthracite and 134,072,834 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

In the case of anthracite there is a decrease of nearly $1\frac{3}{4}$ million tons, whilst bituminous coal shows the enormous rise of more than 9 million tons; taking anthracite and bituminous coal together, there is a net increase of nearly $7\frac{1}{2}$ million tons.

According to Mr. Rothwell,‡ whose early statistics deserve the greatest praise, the output of coal in 1897 was 200,259,243 short tons, a figure differing from the official return of the Geological Survey, issued several months later, by only 37,588 short tons, or less than one-fiftieth of one per cent. of the total.

Copper.—There are three great copper States: Arizona, Michigan, and Montana; the last furnished in 1896 more than 48 per cent. of the total output of the whole country.

Gold.—California, with a yield of 737,036 ozs. in 1896, is still the principal gold-producing state; but the output of Colorado is increasing so rapidly that the latter may eventually take the first place.

Iron.—The chief iron-producing States in order of importance are Michigan, Minnesota, and Alabama. The State of Minnesota§ is yearly becoming of more and more importance as a producer of iron ore, especially since the development within the last four years of the resources of the Mesabi range. The open and underground workings of this region produced 3,082,973 tons of iron ore in 1896. Few, if any, districts in the world can show such a rapidly increasing output, and not only is the quantity large, but the percentage of metal is high. The analysis of 36 cargoes from various mines show percentages of iron ranging from 59 to 65.

Lead.—Colorado was for many years remarkable for its large output of lead; but with the fall in the price of silver many of its mines, which produced both metals, have been stopped. Idaho was the greatest producer in 1896; whilst Utah, Montana, Missouri, and Kansas are likewise large lead-producing States.

Petroleum.—The yield of the oil-wells of the United States far surpasses that of all the rest of the world put together. In 1897 the production was 60,568,081 barrels of 42 gallons.

The principal oil-producing States are Pennsylvania, West Virginia, Ohio, and Indiana.

* *Oest. Zeitsch. f. B. u. Hüttenwesen*, Vol. XLIV., 1897, p. 223.

† *Seventeenth Annual Report of the United States Geological Survey for 1895–96*. Washington, 1896.

‡ *The Mineral Industry for 1897*, New York, 1898.

§ *Trans-American Institute Mining Engineers*, Lake Superior Meeting, July 1897.

UNITED STATES—*continued.*

Phosphate of lime.—South Carolina and Florida supply nearly all the phosphate of lime. The growth of the phosphate industry in the latter State has been most rapid, and has had a disastrous effect upon many of the sources of supply in other countries.

Quicksilver.—California is the only State now producing quicksilver.

Silver.—Colorado, in spite of its slightly decreased production, yields more than two-fifths of the total output of silver, and Montana about one-third.

Zinc.—Zinc ore is abundant in the United States; Illinois, Indiana, Kansas, and Missouri produce seven-eighths of the total quantity obtained.

The importance of Colorado* as a mining State is apparent from the "Report of the State Bureau of Mines, Denver, for the year 1897," which furnishes some very useful statistics. In size Colorado "exceeds the combined area of England, Ireland, Wales, and Belgium." It produced in 1897—

TABLE 481.

Minerals.					1897.	
					Metric Tons.	Statute Tons.
Coal	...	...	...	...	3,234,715	3,183,625
Copper	...	...	...	...	4,152	4,086
Lead	...	...	...	...	36,650	36,071
					Kilos.	Ozs.
Gold	...	...	...	...	29,462	947,249
Silver	...	...	...	...	661,826	21,278,202

More than half of the gold came from El Paso county, which contains the celebrated Cripple Creek District.

In 1897 Colorado employed 29,215 persons at the ore mines, and 7,018 at the coal mines.

TABLE 482.

PERSONS EMPLOYED at COAL MINES in the various STATES during the Years 1896† and 1897‡.

State.	1896.				1897.			
	Under-ground.	Above-ground.	Total.	Short Tons of Coal raised per Person Employed.	Under-ground.	Above-ground.	Total.	Short Tons of Coal raised per Person Employed.
Alabama	—	—	9,894	581	—	—	—	—
Arkansas	—	—	1,507	448	—	—	—	—
California	—	—	177	530	—	—	—	—
Colorado	—	—	6,704	464	—	—	7,018	508
Georgia	—	—	731	337	—	—	—	—
Illinois	—	—	39,560	500	30,248	3,540	33,788	594
Indiana	—	—	8,806	444	—	—	7,984	—
Indian Territory	—	—	3,549	385	—	—	3,470	—
Iowa	—	—	9,672	409	—	—	—	—
Kansas	—	—	7,127	405	—	—	8,476	—
Kentucky	—	—	7,549	441	6,579	1,161	7,740	427
Maryland	—	—	4,039	1,026	—	—	4,276	—
Michigan	—	—	320	290	—	—	—	—
Missouri	—	—	5,982	390	—	—	6,557	—
Montana	—	—	2,335	661	—	—	—	—
Nevada	—	—	—	—	—	—	—	—

* Report of the State Bureau of Mines for the year 1897, Denver, 1898, pp. 125, 157, and 159.

† 18th Report of the United States Geological Survey for 1896-7, Part V., Washington, 1897.

‡ Reports of the various States, and *The Mineral Industry*, Vol. VI., 1897, by R. P. Rothwell, New York and London, 1898, pp. 725-734.

UNITED STATES—*continued.*PERSONS EMPLOYED at COAL MINES in the various STATES during the Years
1896 and 1897—*continued.*

State.	1896.				1897.			
	Under-ground.	Above-ground.	Total.	Short Tons of Coal raised per Person Employed.	Under-ground.	Above-ground.	Total.	Short Tons of Coal raised per Person Employed.
New Mexico	—	—	1,569	397	—	—	1,365	—
North Carolina	—	—	—	—	—	—	—	—
North Dakota	—	—	141	554	—	—	—	—
Ohio	—	—	25,500	505	—	—	—	—
Oregon	—	—	254	400	—	—	—	—
Pennsylvania { Anthracite	—	—	148,991	365	95,812	53,745	149,557	314
{ Bituminous	—	—	72,625	682	73,418	13,136	86,554	617
Tennessee	—	—	6,531	408	—	—	—	—
Texas	—	—	1,953	279	—	—	—	—
Utah... ..	—	—	679	617	—	—	—	—
Virginia	—	—	2,510	500	—	—	—	—
Washington	—	—	2,622	456	—	—	—	—
West Virginia	—	—	19,078	675	17,069	2,047	19,116	612
Wyoming	—	—	2,937	760	—	—	—	—
Total for United States	—	—	393,342	488	—	—	—	—

TABLE 483.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES,
1896 and 1897.*

Product.	Customary Measures.	1896.			1897.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
Non-Metallic.							
Asbestos	Short tons ..	504	457	6,100	580	526	6,450
Asphaltum	" ..	80,503	73,041	577,563	79,545	72,162	664,632
Barytes	Long tons ..	17,068	17,342	46,513	26,042	26,460	58,295
Bauxite	" ..	18,364	18,659	47,338	20,590	20,920	57,652
Borax	Pounds ..	13,508,000	6,127	675,400	16,000,000	7,258	1,080,000
Bromine	" ..	546,580	246	144,501	487,149	220	129,094
Building stone	—	—	—	31,346,171	—	—	36,070,651
Cement	Bls., 300 lbs. ..	9,513,473	1,294,573	6,473,213	10,888,463	1,405,422	8,178,283
Chromic iron ore	Long tons ..	786	799	6,667	—	—	—
Clay (brick)	—	—	—	9,000,000	—	—	8,000,000
" (all other than brick) ..	Long tons ..	360,000	365,777	800,000	—	—	1,000,000
Coal, anthracite†	" ..	48,523,287	49,301,969	81,748,651	46,814,074	47,566,327	79,129,126
" bituminous	Short tons ..	137,640,276	124,865,242	114,891,515	147,789,902	134,072,834	119,740,052
Cobalt oxide	Pounds ..	10,700	5	15,301	19,520	9	31,232
Corundum and emery	Short tons ..	2,120	1,923	113,246	2,165	1,964	106,574
Feldspar	Long tons ..	9,114	9,260	35,200	11,175	11,354	43,100
Fibrous talc	Short tons ..	46,089	41,811	399,443	57,009	51,718	396,936
Flint	Long tons ..	11,124	11,302	24,226	11,952	12,144	26,227
Fluorspar	Short tons ..	6,500	5,897	52,000	5,062	4,591	37,159
Fuller's earth	" ..	9,872	8,955	59,360	17,113	15,564	112,372
Garnet (abrasive)	" ..	—	—	—	2,554	2,316	80,853
Graphite.. ..	Long tons ..	999	1,015	48,460	1,668	1,695	54,277

* Return furnished by the United States Geological Survey, Washington.

† Represents production from Pennsylvania only.

UNITED STATES—continued.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES,
1896 and 1897—continued.

Product.	Customary Measures.	1896.			1897.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
Non-Metallic—cont.				\$			\$
Grindstones	—	—	—	326,826	—	—	368,068
Gypsum	Short tons ..	224,139	203,336	572,344	288,982	262,161	755,864
Infusorial earth	" ..	3,846	3,489	26,792	3,833	3,477	22,835
Limestone for iron flux	Long tons ..	4,120,102	4,186,220	2,060,000	4,247,688	4,315,853	2,124,000
Magnesite	Short tons ..	1,500	1,360	11,000	1,143	1,037	13,671
Manganese ore	Long tons ..	10,088	10,250	90,727	11,108	11,286	95,505
Marls	Short tons ..	60,000	54,431	30,000	60,000	54,431	30,000
Mica	Long tons ..	—	—	67,191	777	789	95,226
Millstones	—	—	—	22,567	—	—	25,932
Mineral waters	Gallons sold ..	25,795,312	—	4,136,192	23,255,911	—	4,599,106
	Litres	117,199,916			105,662,255		
Monazite.. .. .	Pounds	30,000	14	1,500	41,000	20	1,980
Natural gas	—	—	—	13,002,512	—	—	13,826,422
Oilstones.. .. .	—	—	—	127,098	—	—	149,970
Paints, mineral	Short tons ..	48,032	43,574	530,455	60,913	55,260	795,793
Petroleum	Bls., 42 gals. ..	60,960,361	—	58,518,709	60,568,061	—	40,929,611
	Litres	11,632,775,274			11,557,918,351		
Phosphate rock	Long tons ..	930,779	945,716	2,803,372	1,039,345	1,056,024	2,673,202
Precious stones	—	—	—	97,850	—	—	130,675
Pyrites	Long tons ..	115,483	117,336	320,163	143,201	145,499	391,541
Rutile	Pounds	100	—	350	100	—	350
Salt	Bls., 280 lbs. ..	13,850,728	1,759,125	4,040,839	15,973,202	2,028,691	4,920,020
Soapstone	Short tons ..	22,183	20,124	354,065	21,923	19,888	365,629
Sulphur	" ..	5,260	4,771	87,200	2,275	2,063	45,590
Zinc, white	" ..	20,000	18,143	1,400,000	25,000	22,679	1,750,000
Total value of non-metals in \$ .. .. .	.. .. .	—	—	335,138,620	—	—	329,113,845
Total value of non-metals in £ sterling. .. .. .	.. .. .	—	—	68,816,965	—	—	67,579,845
Metallic.				\$			\$
Aluminium	Pounds	1,300,000	589	520,000	4,000,000	1,814	1,500,000
Antimony	Short tons ..	601	546	81,290	756	694	109,655
Copper	Pounds	460,061,430	208,680	49,456,603	491,638,000	223,005	54,080,180
Gold (coining value).. .. .	Troy ounces ..	2,568,132	—	53,088,000	2,774,935	—	57,363,000
	Kilos.	78,977			86,310		
Iron, pig	Long tons ..	8,623,127	8,761,508	90,250,000	9,652,680	9,807,582	95,122,209
Lead	Short tons ..	188,000	170,551	10,528,000	208,192	188,869	14,885,728
Nickel	Pounds	17,170	8	1,464	23,707	11	7,823
Platinum	Troy ounces ..	163	—	944	150	—	900
	Kilos.	5			5		
Quicksilver	Flasks 76½ lbs. ..	30,765	1,068	1,075,440	26,648	925	993,445
Silver (coining value)	Troy ounces ..	58,834,800	—	76,069,236	53,860,000	—	69,637,172
	Kilos.	1,829,968			1,675,234		
Zinc	Short tons ..	81,499	73,935	6,519,920	99,980	90,700	8,498,300
Total value of metals in \$ .. .. .	.. .. .	—	—	287,596,906	—	—	302,196,502
" " " £ sterling .. .. .	.. .. .	—	—	59,054,806	—	—	62,053,080
Estimated value of products unspecified. .. .. .	.. .. .	—	—	1,000,000	—	—	1,000,000
Total value in \$ .. .. .	.. .. .	—	—	623,735,526	—	—	632,312,347
" " " £ sterling.. .. .	.. .. .	—	—	128,077,110	—	—	120,838,264

UNITED STATES—*continued.*

The following tables give further details concerning the output of coal and iron ore.

TABLE 484.

COMPARATIVE OUTPUT for the Years 1896 and 1897 in the principal COAL-PRODUCING STATES.

State.	1896.*	1897.†	Comparison with previous Year.
	Metric Tons.	Metric Tons.	Metric Tons.
Illinois	17,950,137	18,209,712	+ 259,575
Ohio	11,680,195	11,339,817	— 340,378
Pennsylvania { Anthracite ...	49,301,969	47,700,746	— 1,601,223
{ Bituminous ...	44,957,796	49,599,699	+ 4,641,903
West Virginia	11,681,187	11,893,679	+ 212,492
Other States	38,595,927	42,894,508	+ 4,298,581
Total	174,167,211	181,638,161	+ 7,470,950

TABLE 485.

PRODUCTION of IRON ORES.‡

State.	Red Hematite.	Brown Hematite.	Magnetite.	Carbonate.	Total.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
Michigan	5,726,441	—	71,874	—	5,798,315
Minnesota	4,352,626	—	—	—	4,352,626
Alabama	1,722,148	352,411	—	—	2,074,559
Other States	976,892	1,807,922	1,159,094	92,890	4,036,798
Total for 1896	12,778,107	2,160,333	1,230,968	92,890	16,262,298
„ 1895	12,714,815	2,136,096	1,288,574	74,211	16,213,696

TABLE 486.

DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1896 and 1897.§

State.	1896.			1897.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Tons of Mineral raised per Life lost.
Colorado	68	9.25	49,582	35	4.99	101,876
Illinois	77	2.08	256,969	69	2.04	290,909
Indiana	28	3.94	145,290	16	2.00	264,255
Indian Territory	12	3.26	102,944	22	6.34	60,672
Kansas	12	1.36	265,979	6	0.71	612,032
Kentucky	6	0.79	530,413	12	1.55	275,338
Maryland	6	1.58	677,119	5	1.17	882,386
Missouri	15	2.28	161,343	8	1.22	303,673
New Mexico	7	4.87	88,947	7	5.13	104,791
Ohio	41	1.44	485,673	—	—	—
Pennsylvania { Anthracite ...	502	3.54	95,766	424	2.84	110,725
{ Bituminous ...	180	2.14	279,298	149	1.60	366,941
West Virginia	59	3.09	201,588	62	2.89	186,643

* *The Seventeenth Annual Report of the Geological Survey for 1896-7, part V., Washington, 1897.*

† Compiled from the Reports of the various States.

‡ Extract from the *Eighteenth Annual Report of the United States Geological Survey for 1896-7, part V., Washington, 1897, pp. 6 and 7.*

§ Compiled from the Reports of Inspectors of Mines for the various States, and *The Mineral Industry*, Vol. VI., 1897, by R. P. Rothwell, New York and London, 1898, pp. 722-735.

UNITED STATES—*continued.*

The high death-rate in Colorado for the year 1896 is attributable to an explosion at Vulcan colliery (Garfield County), by which 49 men were killed.*

On the 3rd September 1897, 12 men were killed in the Sunshine Coal Mine, Colorado, by an explosion of coal dust and air. The mine was entirely free from fire-damp, the presence of which had never been detected in any of the workings, and was worked by naked lights. It is believed that the dusty atmosphere was ignited by the firing of a shot charged with gunpowder.†

ACCIDENTS AT ORE MINES.

COLORADO.

The death-rate from accidents at the ore mines for the year 1897 was very high, viz., 3·76 per 1,000.‡ Falls of earth and rock caused only one-fifth of the deaths, a comparatively small proportion, whilst blasting operations appear to be unusually deadly in their results. No less than 40 persons were killed from the use of explosives in Colorado, with less than 30,000 persons employed. When I state that only 29 persons were killed in this country by the same cause out of a total of 728,000 persons, the Colorado death-rate is evidently abnormally high.

TABLE 487.

DEATHS FROM ACCIDENTS at certain ORE MINES in the STATE of MICHIGAN.§

County.	Kind of Mines.	Year ending 30th September 1896.			Year ending 30th September 1897.		
		Number of Persons Employed.	Deaths from Accidents.	Death-rate per 1,000 Persons.	Number of Persons Employed.	Deaths from Accidents.	Death-rate per 1,000 Persons.
Dickinson County ...	Iron	—	—	—	—	10	4·62
Gogebic " ...	"	—	—	—	—	8	4·75
Houghton " ...	Copper	8,170	19	2·33	8,726	26	2·98
Iron " ...	—	—	—	—	—	1	2·07
Marquette " ...	Iron	4,650	25	5·37	—	17	4·09

LAKE SUPERIOR COPPER MINES.

TABLE 488.

DEATHS FROM ACCIDENTS at MINES in HOUGHTON COUNTY, MICHIGAN, during the Years ending 30th September, 1890–97.||

Year.	Number of Persons Employed.	Number of Deaths.			Death-rate per 1,000 Persons Employed.
		Under-ground.	Above-ground.	Total.	
1890 ...	7,310	—	—	36	4·92
1891 ...	7,702	26	2	28	3·64
1892 ...	7,640	17	4	21	2·75
1893 ...	7,591	23	1	24	3·16
1894 ...	7,348	22	—	22	2·99
1895 ...	7,249	45	1	46	6·35
1896 ...	8,170	19	—	19	2·33
1897 ...	8,726	26	—	26	2·98

The death-rate at the Lake Superior Copper Mines in 1895 was far higher than usual, owing to the underground fire at the Osceola Mine, by which 30 men lost their lives.

* *Seventh Biennial Report of the Inspector of Coal Mines for Colorado.* Denver, 1897.

† Griffiths, "Special Report made to the Governor of Colorado," *Mines and Minerals*, Scranton, Pa., Vol. XVIII., pp. 291 and 292.

‡ *Report of the State Bureau of Mines for the year 1897.* Denver, 1898.

§ *State of Michigan. Mines and Mineral Statistics.* By George A. Newett, Commissioner of Mineral Statistics. Lansing, 1898.

|| Compiled from the Reports of the Inspector of Mines for Houghton Co.

UNITED STATES—*continued.*

The Report of the Pennsylvania Bureau of Mines for 1897* contains the full text of the laws which have been passed by the State Legislature for regulating the working of anthracite mines and bituminous coal mines. In both classes of mines the sections relating to ventilation endeavour to secure an adequate supply of air by prescribing a statutory minimum quantity. In the case of the anthracite mines the section is as follows :—

“The minimum quantity of air thus produced shall not be less than two hundred (200) cubic feet per minute for each and every person employed in any mine, and as much more as the circumstances may require.”

Article IV., section 1 of the Act governing bituminous coal mines is somewhat different, viz. :—

“The operator or superintendent of every bituminous coal mine, whether shaft, slope, or drift, shall provide and hereafter maintain ample means of ventilation for the circulation of air through the main-entries, cross-entries, and all other working places to an extent that will dilute, carry off and render harmless the noxious or dangerous gases, generated in the mine, affording not less than one hundred cubic feet per minute for each and every person employed therein ; but in a mine where fire-damp has been detected the minimum shall be one hundred and fifty cubic feet per minute for each person employed therein, and as much more in either case as one or more of the mine inspectors may deem requisite.”

Uruguay.†

The number of persons employed at mines and quarries in the Republic of Uruguay is unknown ; judging from the output of auriferous quartz, which appears to be the principal mineral worked, the mining population cannot be large.

TABLE 489.

QUANTITY and VALUE of GOLD produced in 1896 and 1897.

Mineral.	1896.†		1897.§	
	Quantity.	Value.	Quantity.	Value.
Gold	Kilos. 41	£ 5,585	Kilos. 87	£ 8,343

Venezuela.‡

According to official statements the country abounds in asphalt, coal, petroleum, and sulphur, as well as in the ores of copper, gold, iron, lead, silver, and tin.

TABLE 490.

QUANTITY and VALUE of GOLD produced in 1895 and 1896.

1895.		1896.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 1,368	£ 186,883	Kilos. 1,427	£ 194,764

* Harrisburg, 1898.

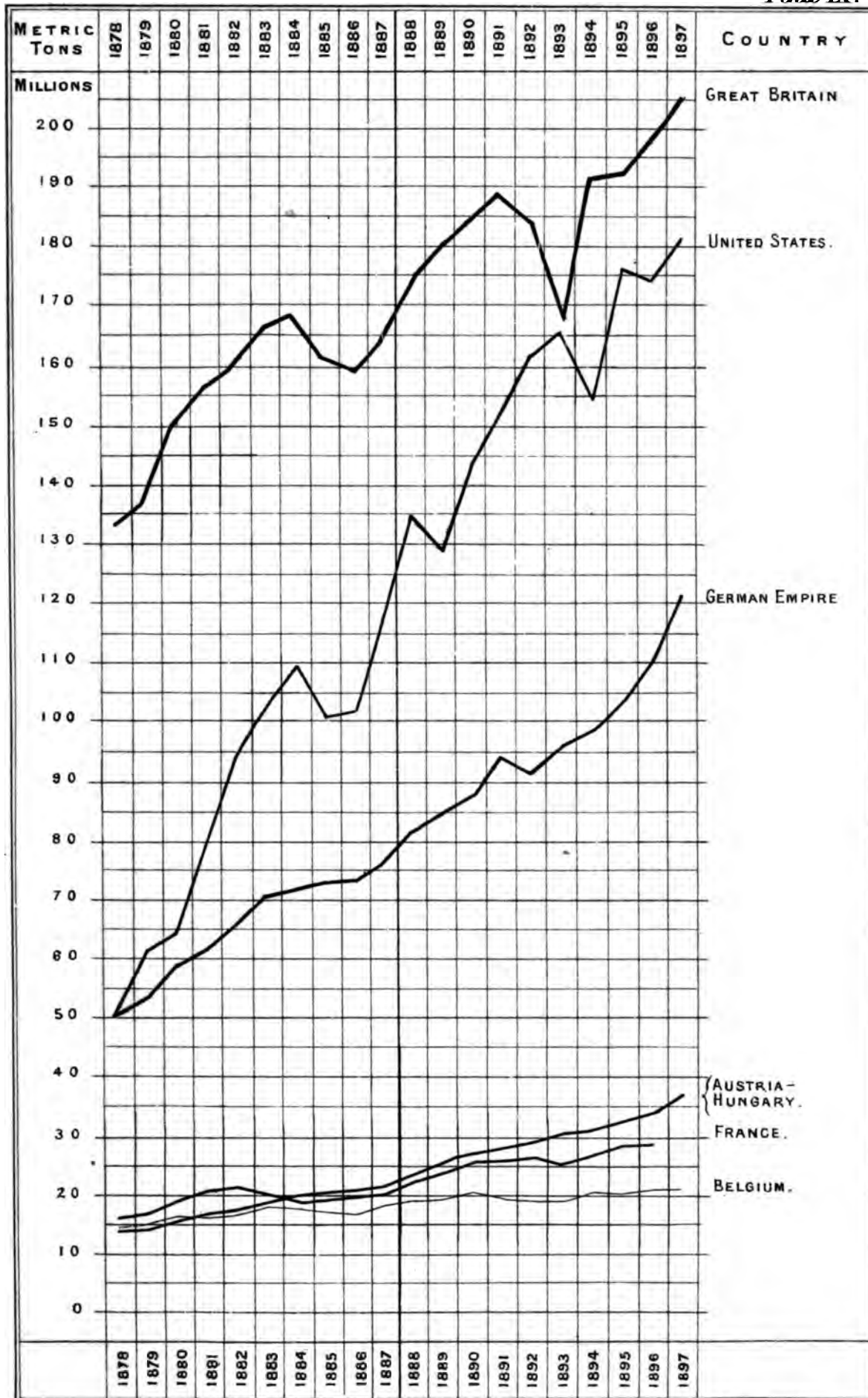
† Official Return furnished by the Republic of Uruguay.

‡ Report of the Director of the United States Mint for 1897.

§ Return furnished by the Department of Mines, Monte Video.

DIAGRAM SHOWING THE OUTPUT OF COAL IN SIX OF THE
PRINCIPAL COAL-PRODUCING COUNTRIES DURING THE PAST
TWENTY YEARS.

Plate IX.



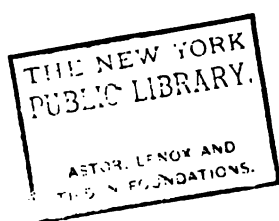
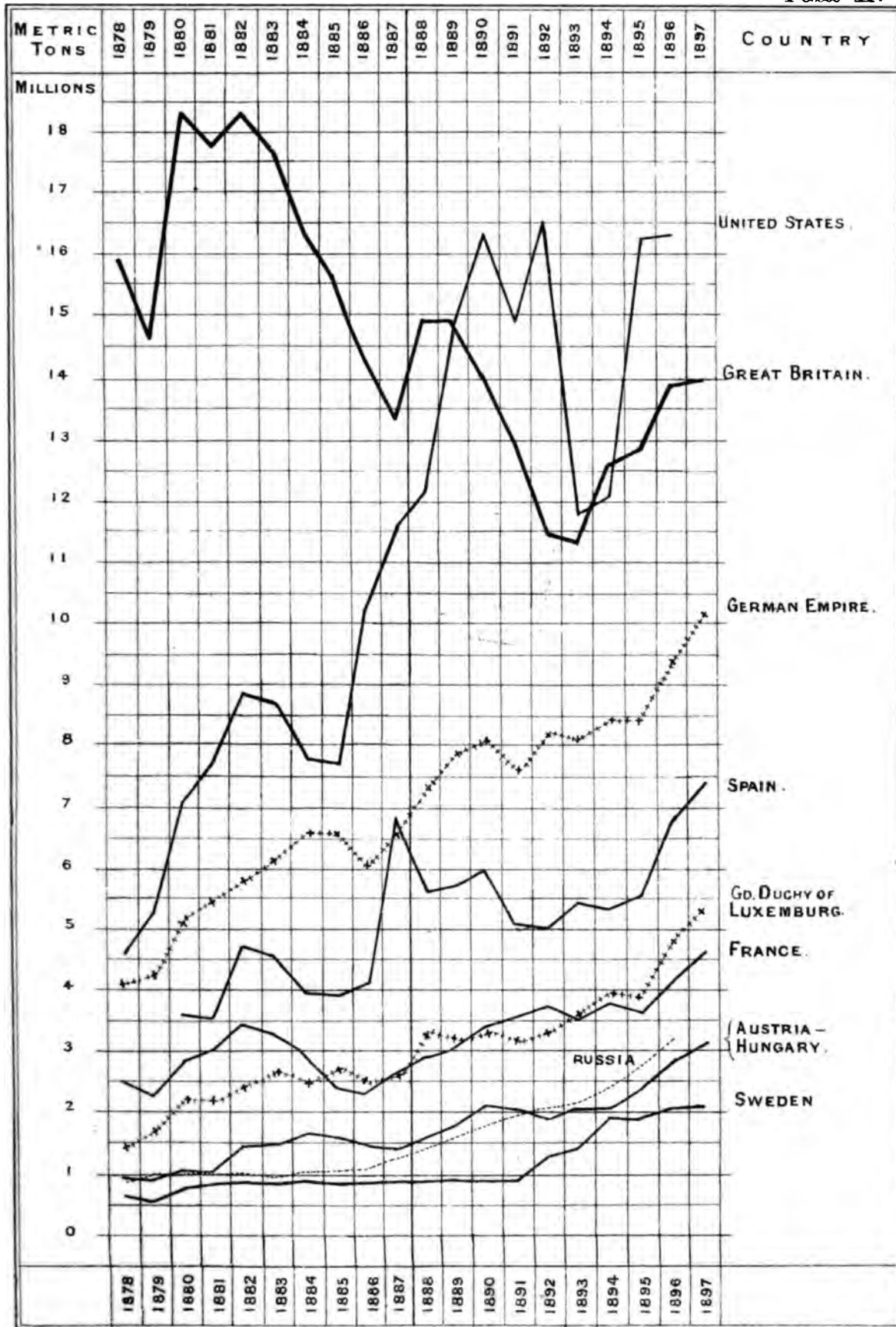


DIAGRAM SHOWING THE OUTPUT OF IRON ORE IN THE PRINCIPAL
IRON-PRODUCING COUNTRIES DURING THE PAST
TWENTY YEARS.

Plate X.



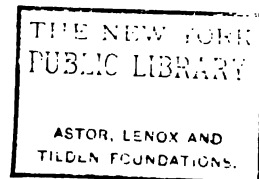
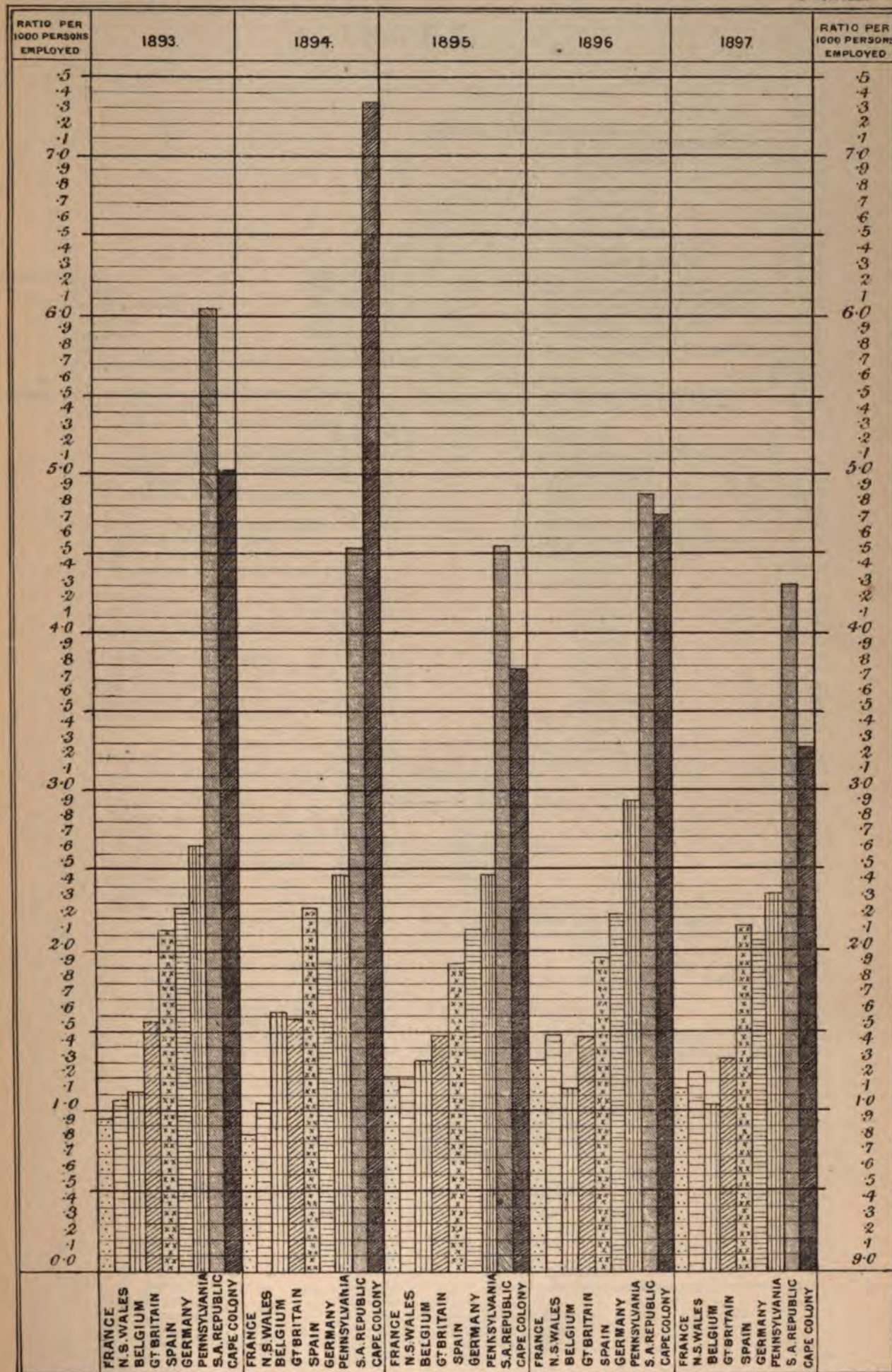
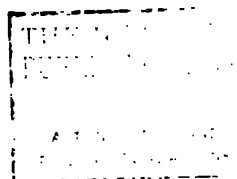


DIAGRAM SHOWING RATIOS OF DEATHS FROM ACCIDENTS PER 1,000 PERSONS EMPLOYED IN AND ABOUT ALL MINES IN SOME OF THE PRINCIPAL MINING COUNTRIES FOR THE PAST FIVE YEARS.

Plate XI





	Page.		Page.
Chromic iron ore, Output of— <i>cont.</i>		Coal-fields of the United Kingdom, List of	45
Greece	362	" Fatal accidents	84-86
New Caledonia	370	" Mineral output	167, 168
Newfoundland	309	" Persons employed	46, 47
New South Wales	311	Coal-dust (<i>see Accidents</i>)	
Norway	371	Coal gas, Explosions on board ships	89
Russia	377	Coal measures, Distribution in the United Kingdom	164
Turkey	391	Coal mines, definition	44
United States	394	" Fatal accidents at	63
Clackmannan, Clay	128, 146, 161	" Mineral output from	167, 168
" Ba-alt	138, 146, 157	" Persons employed at	44, 46
" Coal	128, 146, 166, 169	" Regulation Act	7
" Sandstone	139, 147, 246	Cobalt and Nickel ores, Output of:	
" Persons employed in	49, 57, 129, 139, 147	The United Kingdom	125, 182
Clare, Gravel and sand	140, 148, 196	Chili	339
" Sandstone	141, 149, 247	German Empire	351
" Persons employed in	58, 141, 149	Hungary	332
Clay, Output of the United Kingdom	12, 125, 161, 162, 284	New Caledonia	370
" Production of:		Norway	371
Algeria	323	Prussia	357
Belgium	336	Russia	377
Chili	339	Saxony	360
France	347	Spain	385
India	303-306	Sweden	388
Spain	385	United States	394
United States	394	Cochin China, Output of Jet	364
Victoria	319	Coke exported from the United Kingdom	170, 180-182
" Exports from the United Kingdom	163	" shipped coastwise	177, 182
" Quarries, Fatal accidents in	89, 90	" Output of:	
" Persons employed in	55	British Columbia	291
Cleveland iron ore, Output of	198	Canada	290
Coal, Output of the United Kingdom	12, 125, 165-170, 279, 284	New South Wales	311
" in each Coal-field	167, 168	New Zealand	313
" County 128, 130, 144, 146, 148, 165, 166		Nova Scotia	292
" Output of:		Colombia, Mineral output	279, 340, 341
Austria	279, 326	Colorado, Accidents	396, 397
Bavaria	356	" Mineral output	393
Belgium	279, 335, 336	" Persons employed	393
Bosnia and Herzegovina	279, 333	Conglomerate, output of Belgium	336
British Columbia	291	Congo Free State	341
British North Borneo	279, 288	Copper exported	186-188
Bulgaria	279, 334	" imported	189, 190
Canada	279, 290	" obtained from British ores	125, 183, 184
Cape Colony	279, 294	" Foreign ores	190, 218
Chili	279, 339	" Price in the London market	185, 186
Dutch East Indies	279, 343, 344	" Smelters in the United Kingdom	190
France	279, 346	Copper or Copper ore, Output of:	
German Empire	279, 351, 353	The United Kingdom	12, 125, 183-185, 279, 284, 285
Greece	279	Argentina Republic	279, 324
Holland	279, 363	Austria	279, 326
Hungary	279, 332	Bolivia	279, 337
Illinois	396	Bosnia and Herzegovina	279, 333
India	279, 303-306	British Columbia	291
Italy	279, 366	Canada	279, 290
Japan	279, 368	Cape Colony	279, 294
Java	343	Chili	279, 339
Mexico	369	Dutch East Indies	279
Natal	279, 303	France	279, 346
New South Wales	279, 311	German Empire	279, 351
New Zealand	279, 313	Hungary	279, 332
Nova Scotia	292	India	279, 303, 306
Ohio	396	Italy	279, 366
Pennsylvania	396	Japan	279
Portugal	279, 373	Java	343
Prussia	357	Mexico	369
Queensland	279, 315	Newfoundland	279, 309
Russia	279, 377	New South Wales	279, 311
Saxony	360	New Zealand	313
Servia	279, 378	Norway	279, 371
South African Republic	279, 381	Nova Scotia	292
Spain	279, 345	Ontario	293
Sumatra	344	Portugal	279, 373
Sweden	279, 388	Prussia	357
Tasmania	279, 318	Queensland	279, 315
Tong-King	364	Russia	279, 377
Turkey	279, 391	Servia	279, 378
United States	279, 394, 396	South Australia	279, 317
Victoria	279, 319	Spain	279, 385
West Virginia	396	Sweden	279, 388
" Output per person employed	168, 169	Tasmania	279
" exported from the United Kingdom	170, 180-182	Turkey	391
" imported into	179	United States	279, 395
" Average price in the several Coal-fields	168	Western Australia	279, 321
" in the several Counties	165, 169	Copper precipitate, Production of:	
" in the London market	171	The United Kingdom	12, 125, 126, 183, 185, 284
" at the Pit's mouth	165, 166	Portugal	373
" at the several Ports	141	Copper vitriol, Output of Hungary	332
" Quantity retained for home consumption	170	Coprolites (<i>see Phosphate of lime</i>)	239
" per head of population	170	" conveyed by railway	240
" shipped coastwise	177, 178	Corea, Mineral wealth of	341
" for use of steamers	170, 182	Cork Co., Clay	140, 148, 162
" conveyed by railway, canal, &c.	173-176	" Barytes	134, 148, 155, 156
" used in the blast furnaces of United Kingdom	206, 208-213	" Granite	140, 148, 194
		" Gravel and sand	140, 148, 196
		" Limestone	141, 149, 232

	Page.
Norfolk, Chalk	136, 144, 159
" Chert and flint	136, 144, 160
" Clay	136, 144, 161
" Gravel and sand	136, 144, 195
" Limestone	137, 145, 231
" Sandstone	137, 145, 246
" Persons employed in	56, 137, 145
Northamptonshire, Clay	136, 144, 161
" Gravel and sand	136, 144, 195
" Iron ore	136, 142, 144, 199, 203
" Limestone	132, 137, 145, 231
" Sandstone	133, 137, 145, 246
" Persons employed in	53, 133, 137, 145
" Blast furnaces in	206, 209
Northern Coal-field, Fatal accidents in	84
" Output of Mineral therefrom	167, 168
" Persons employed therein	46, 47
Northumberland, Barytes	132, 144, 155, 156
" Basalt	136, 144, 157
" Clay	128, 136, 144, 161
" Coal	128, 144, 165, 169
" Gravel and sand	136, 144, 195
" Lead ore	132, 144, 220, 221
" Limestone	137, 145, 231
" Sandstone	129, 137, 145, 246
" Blast furnaces in	206, 210
" Coal conveyed by rail from	174
" Copper smelters in	190
" Lead smelters in	229
" Persons employed in	48, 53, 56, 129, 133, 137, 145
North Wales Coal-field, Fatal accidents in	84
" Output of Mineral therefrom	167, 168
" Persons employed therein	46, 47
Norway, Mineral output	279, 371
" Persons employed	278, 371
Nottinghamshire, Clay	128, 136, 144, 161
" Coal	128, 144, 165, 169
" Gravel and sand	136, 144, 195
" Gypsum	132, 136, 144, 196
" Iron ore	136, 144, 199, 203
" Iron pyrites	128, 144, 216
" Limestone	137, 145, 231
" Sandstone	137, 146, 246
" Blast furnaces in	206, 210
" Coal conveyed by rail from	173, 174
" Copper smelters in	191
" Persons employed in	48, 53, 56, 129, 133, 137, 145
Nova Scotia, Accidents	293
" Mineral output	292
" Persons employed	292

Q

OOHRE AND UMBER, Output of :	
The United Kingdom	12, 125, 235, 236, 284
Bavaria	356
Belgium	336
Canada	290
Cyprus	299
France	347
India	303, 306
Saxony	360
Spain	385
Ohio, Accidents at Coal Mines	396
Oil shale, Output of :	
The United Kingdom	12, 125, 237, 238, 284
New South Wales	311
Oil stones, Output of United States	395
Onyx, Output of :	
Algeria	323
France	347
Ontario, Accidents	294
" Mineral output	293
" Persons employed	293
Opal, Output of :	
New South Wales	311
Queensland	315
Orange Free State Diamond Mines and Coal-field	371
Orkney, Sandstone	139, 147
" Persons employed in	57, 139, 147
Output of Minerals from Mines in each inspection district under the Coal Mines Act	9, 16, 17

	Page.
Output of Minerals from Mines in each inspection district under the Metalliferous Mines Act	9, 18, 19
Output of Minerals from Mines in each inspection district under the Quarries Act	9, 20, 21
Output of Minerals from certain shallow workings	22, 23
Output of Minerals from each county under the Coal Mines Act	128-131
Output of Minerals from each county under the Metalliferous Mines Act	132-135
Output of Minerals from each county under the Quarries Act	136-141
Output of Minerals from shallow workings, brine wells, &c.	142, 143
Output of Minerals from the several Coal-fields	167, 168
" " in the United Kingdom, General Summary	12, 125, 284
" " in British Colonies	279, 283-321
" " in Foreign Countries	279, 322-399
" " (see also under each Colony and Country, and under each Mineral).	
Overwinding, Accident from, at Garth Merthyr Colliery	74
" " Remarks by Mr. J. T. Robson and Mr. J. S. Martin	74
Oxfordshire, Chalk	136, 144, 159
" Chert and flint	136, 144, 160
" Clay	136, 144, 161
" Gravel and sand	136, 144, 195
" Iron ore	142, 144, 199
" Limestone	137, 145, 231
" Sandstone	137, 145, 246
" Persons employed in	56, 137, 145
Ozokerite, Output of Austria	327

P.

PAHANG, Mineral output	300
Paraguay, Mineral deposits of	372
Patent fuel, Exported	170, 180-182
" Shipped coastwise	177, 178, 182
Paving stone, Output of :	
Bavaria	356
Belgium	336
France	347
Peat, Output of :	
France	346
Italy	366
Peebles, Basalt	138, 146, 157
" Coal	128, 146, 166, 169
" Limestone	139, 147, 232
" Sandstone	139, 147, 247
" Persons employed in	49, 57, 129, 139, 147
Pembroke, Coal and anthracite	128, 146, 166, 167, 169
" Granite	138, 146, 194
" Iron ore	128, 146, 199, 200
" Limestone	139, 147, 231
" Sandstone	139, 147, 246
" Slate	139, 147, 250
" Persons employed in	49, 57, 129, 139, 147
Perak, Mineral output	300
Persia, Minerals obtained in	372
Pennsylvania, Accidents	396
" Output of Coal	396
" Persons employed	394
" Legislation relating to Mines	398
Persons employed in Mines inspection districts under the Coal Mines Act	13
Persons employed in Mines inspection districts under the Metalliferous Mines Act	14
Persons employed in Mines inspection districts under the Quarries Act	15
Persons employed in each county under the Coal Mines Act	129, 131
Persons employed in each county under the Metalliferous Mines Act	133, 135
Persons employed in each county under the Quarries Act	137, 139, 141
Persons employed in the several Coal-fields	46, 47
" " at Coal Mines	48, 49
" " Iron Mines	50, 51
" " "other" Mines	51-54
" " different kinds of Quarries	55
" " Mines and Quarries in the United Kingdom, Summary	11, 43, 278, 283
" " Mines and Quarries in British Colonies, Summary of	278

	Page.		Page.
Persons employed at Mines and Quarries in Foreign Countries, Summary of	278	Petroleum, Output of :	
Persons employed in Mining in :		The United Kingdom	12, 125, 235, 284
Algeria	278, 323	Austria	279, 327
Austria	278, 325, 326	Bosnia and Herzegovina	333
Banca	343	Canada	279, 290
Bavaria	355	Dutch East Indies... ..	279
Belgium	278, 334, 335	German Empire	279, 351
Billiton	343	Great Britain	279
Bohemia	331	Hungary	279, 332
Bosnia and Herzegovina	278, 333	India	279, 303-306
British Columbia	292	Italy... ..	279, 366
British Guiana... ..	278, 286	Japan	279, 363
British New Guinea	278, 287	Ontario	293
Bulgaria	278, 338	Prussia	357
Canada	278	Roumania	279, 374
Cape Colony	278, 294	Russia	279, 377
Ceylon	278, 297	Sumatra	344
Chili	278, 339	United States	279, 395
Denmark	278, 342	Philippine Islands, Mineral deposits of	373
Dutch East Indies	278, 342, 343, 344	Phosphate of alumina, Output of Redonda	316
Federated Malay States	278, 299	Phosphate of lime, Conveyed by railway... ..	240
France	278, 345, 346	" " Imported	240
German Empire... ..	278, 350, 351	" " Output of :	
Greece	361	The United Kingdom	12, 125, 239
Greenland	278, 342	Algeria	240, 284
Holland	278, 363	Belgium	323
Hungary	278, 331, 333	Canada	336
India	278, 302	France	290
Italy	278, 365	Chili	340
Japan	278, 367	French Guiana	347, 349
Kimberley	295	Norway	349
Mexico	278, 369	Russia	371
Natal	278, 308	Spain	377
New Caledonia	278, 370	Tunis	385
New South Wales	278, 311	United States	391
New Zealand	278, 312, 313		395
Norway	278, 372	Pig iron (<i>see</i> Iron, Pig).	
Nova Scotia	292	Platinum, Output of :	
Ontario	293	Canada	290
Peru	278, 372	New South Wales	311
Portugal	278, 373	Russia	377
Prussia	356	United States	395
Queensland	278, 315	Plumbago (<i>see</i> Graphite).	
Redonda	278, 316	Porcelain earth, Output of :	
Russia	278, 376	Bavaria	356
Saxony	360	Belgium	336
Servia	278, 378	Porphyry, Output of Queensland	315
Siam	278, 379	Portugal, Accidents	280, 281, 374
Singkep	343	" Mineral output	279, 373
South African Republic	278, 381	" Persons employed	278, 373
South Australia	278, 317	Potassium salts, Output of :	
Spain	278, 384, 385	German Empire... ..	351, 352
Sumatra	343	Prussia	357, 358
Sweden	278, 387	Potter's clay, Exported	163
Switzerland	278, 389	" " Output of :	
Tasmania... ..	278, 318	The United Kingdom... ..	161
Turkey	392	France	347
United States	278, 393, 294	Pozzolana, Output of Switzerland	389
Victoria	278, 319	Precious stones, Output of :	
Western Australia	278, 320	Cape Colony	294
Zululand	308	Ceylon	298
Persons employed at Petroleum Wells :		India	303, 305, 306
Austria	326	New South Wales	311
Russia	376	Queensland	315
Persons employed at Quarries :		Siam	379
Algeria	322	United States	395
Belgium	334	Prices of sea-borne Coal in the London market... ..	171
Ceylon	297	" Coal at the pit's mouth	165, 166, 168, 169, 141
Channel Islands... ..	278, 298	" " at various shipping ports	141
France	346	" " Diagram shewing fluctuations from 1873	
Holland	363	to 1897	270
Italy	365	" Pig iron at the works	214, 215
Mexico	369	" Antimony in London market	15
Portugal	373	" Copper " " "	185
Sweden	387	" Lead " " " "	225
Switzerland	389	" Standard silver " " " "	249
Western Australia		" Tin " " " " "	259
Persons employed at Salt Works :		" Zinc " " " " "	269
Austria	326	" Cleveland Pig, Copper, Lead, Tin, and Zinc;	
Bosnia and Herzegovina	333	Diagram shewing fluctuations from 1873	
German Empire	351	to 1897	270
Italy	365	Props and timbering, Remarks on the use of	71
Russia	376	Prosecutions under the Mines Act	99, 100
Persons employed at Turbaries :		" " Quarries Act	101
Italy	365	" " Factory and Workshop Acts	102
Perthshire, Basalt	138, 146, 157	Prussia, Accidents	358-361
" Limestone	139, 147, 232	" Mineral output	357, 358
" Sandstone	139, 147, 247	" Persons employed	356
" Slate	139, 147, 250	Pumice, Output of Mexico	369
" Persons employed in	57, 139, 147	Pyrites (<i>see</i> Iron pyrites).	
Peru, Mineral output	279, 372		
" Persons employed	278, 372		
Petroleum, Imported	239		

	Page.
Q.	
QUARRIES, Death-rate from accidents at...	36, 97, 98
" Fatal accidents at ...	28, 29, 89-98
(See also under Accidents.)	
" Fatal accidents at different kinds of ...	89, 90
" Non-fatal accidents at...	34, 35
" Mineral output in each county ...	136-141
" " " inspection district ...	20, 21
" Persons employed in each county ...	56-58, 137, 139, 141
" " " inspection district ...	15
" " " at different kinds of ...	55
Quarries, Output of :	
Algeria ...	323
Belgium ...	336
France ...	347
Italy ...	366
Sweden ...	388
Quartz, Output of :	
The United Kingdom ...	241, 284
Saxony ...	360
Queen's County, Basalt ...	140, 148, 158
" Coal ...	130, 148, 166, 169
" Limestone... ..	141, 149, 232
" Persons employed in ...	58, 141, 149
Queensland, Accidents ...	280, 281, 315
" Legislation relating to Mines ...	316
" Mineral output ...	279, 315
" Persons employed ...	278, 315
Quicksilver, Exported ...	242
" Imported ...	241
Quicksilver ore, Output of :	
Austria ...	327
Canada ...	290
Hungary ...	332
Italy ...	366
Japan ...	368
Mexico ...	369
Prussia ...	357
Russia ...	377
Spain ...	385
United States ...	395

R.

RADNORSHIRE, Basalt ...	138, 146, 157
" Limestone ...	139, 147, 231
" Sandstone ...	139, 147, 246
" Slate ...	139, 147, 250
" Persons employed in ...	57, 139, 147
Railway traffic of Coal and coke ...	173-175
Railways and sidings, Fatal accidents on, at Mines ...	24-28, 81, 85, 86
" " " Quarries ...	28, 29, 95-97
Redonda, Output of Phosphate of alumina ...	316
" Persons employed ...	316
Red " oxide of iron, Output of Gloucestershire and Somerset ...	236
Regulus, Exported ...	188
" Imported ...	189, 190
Renfrewshire, Barytes ...	134, 146, 155, 156
" Basalt ...	128, 138, 146, 157
" Clay ...	128, 146, 161
" Coal ...	128, 146, 166, 169
" Gravel and sand ...	138, 146, 195
" Iron ore ...	128, 146, 199, 200
" Limestone ...	128, 139, 147, 232
" Oil shale ...	129, 147, 237
" Sandstone ...	135, 139, 147, 247
" Persons employed in ...	49, 51, 54, 57, 129, 135, 139, 147
" Coal conveyed by rail from ...	174
Rhodesia, Output of Gold ...	316
Robson, J. T., on the use of explosives ...	76
" on Broadoak Colliery Explosion ...	76
" on overwinding accidents ...	76
Roburite, Accidents with ...	75

Rock salt, Conveyed by railways, &c. ...	244
" Exported ...	245
" Output of the United Kingdom ...	243
Roofing slates and slate slabs, Exported ...	254
" " " Output of the United Kingdom... ..	12, 125, 249-253, 284
Ropes or chains breaking, Accidents from ...	24, 25, 28, 29, 30-35, 74
Roscommon, Coal ...	130, 148, 166, 169
" Sandstone ...	141, 149, 247
" Persons employed in... ..	49, 58, 131, 141, 149
Ross and Cromarty, Sandstone ...	141, 147, 247
" " " Persons employed in ...	141, 147
Roumania, Mineral output ...	279, 374
Roxburgh, Basalt ...	138, 146, 157
" Limestone ...	139, 147, 232
" Sandstone ...	139, 147, 247
" Persons employed in ...	57, 139, 147
Rubies, Output of India ...	303, 305
Russia, Accidents ...	280, 281, 378
" Mineral output ...	279, 377
" Persons employed ...	278, 376
Rutile (see Titanium).	
Rutland, Iron ore ...	142, 144, 199, 203
" Limestone ...	137, 145, 231
" Sandstone ...	137, 145, 246
" Persons employed in ...	56, 137, 145

S.

SAFETY-LAMPS, Accidents caused by ...	66, 67
" Remarks by Mr. J. S. Martin on the use of ...	105
St. Martin, Salt workings (see Dutch West Indies) ...	344
Salt, Exported ...	245
" Conveyed by railway, canal, &c. ...	244, 245
" Rock and white, Output of :	
The United Kingdom ...	12, 125, 243, 279, 284
Algeria ...	279, 322
Austria ...	279
Bahamas ...	279, 286
Bavaria ...	356
Bosnia and Herzegovina ...	279, 333
Canada ...	279, 290
Cape Colony ...	279, 294
Ceylon ...	279, 298
Cyprus ...	279, 299
Egypt ...	345
France ...	279, 346
German Empire ...	279, 351, 352, 353
Greece ...	279, 362
Hungary ...	279, 332
India ...	279, 303-306
Italy ...	279, 366
Japan ...	368
Mexico ...	369
Ontario ...	293
Peru ...	279, 372
Prussia ...	357, 358
Roumania ...	279, 374
Russia ...	279, 377
Spain ...	279, 385
Switzerland ...	279, 389
Tunis ...	279, 391
Turkey ...	279, 392
United States ...	279, 395
Sand and gravel, Output of :	
The United Kingdom ...	12, 125, 195, 284
Algeria ...	323
Bavaria ...	356
Belgium ...	336
Canada ...	290
France ...	347
Sandstone, Output of	
The United Kingdom ...	12, 125, 246, 284
Bavaria ...	356
India ...	303-306
Queensland ...	315
Sandstone Quarries, Accidents in ...	89, 90
" Persons employed in... ..	55
Saxony, Accidents ...	361
" Mineral output ...	360
" Persons employed ...	360
Scotch Coal-fields, Counties in which worked ...	45
" " Accidents in ...	84, 87
" " Output of minerals therefrom ...	167, 168
" " Persons employed in ...	46, 47

	Page.
U.	
UMBER, ochre, &c., Output of :	
The United Kingdom ...	12, 125, 235, 236, 284
Cyprus ...	299
Saxony ...	360
Underground fires at Mines ...	26, 27, 79
" fire at Snaefell Mine ...	79
" haulage accidents ...	78
" Remarks by Mr. Atkin-	
son, Mr. Bain, and Mr. Stokes ...	78
Unfenced quarries ...	97
United States, Accidents ...	280, 281, 396, 397
" Legislation relating to Mines in Pennsyl-	
" vania ...	398
" Mineral output ...	279, 394, 395, 396
" Persons employed ...	278, 393, 394
Uranium ore, Output of :	
The United Kingdom ...	12, 125, 262, 284
Austria ...	327
German Empire ...	352
Saxony ...	360
Uruguay, Output of gold ...	279, 398

V.	
VENEZUELA, Output of gold ...	279, 399
Ventilation of Mines in Mr. Robson's district ...	105
Victoria, Accidents ...	280, 281, 320
" Legislation relating to Mines ...	320
" Mineral output ...	279, 319
" Persons employed ...	278, 319
Vitriol ore, Output of :	
German Empire ...	352
Prussia ...	357

W.	
WALES, Coal conveyed by rail from North and South	
Wales ...	173, 174
" Mineral output of, Summary ...	126
(See also under each County.)	
" North and South Wales Coal-fields :	
Accidents in Mines ...	84, 85, 86
Mineral output ...	167, 168, 169
Persons employed ...	46, 47, 48
Warwickshire, Basalt ...	136, 144, 157
" Clay ...	128, 136, 144, 161
" Coal ...	128, 144, 165, 169
" Gravel and Sand ...	136, 144, 195
" Iron ore ...	128, 144, 199, 200
" Iron pyrites ...	128, 144, 216
" Limestone ...	128, 137, 145, 231
" Sandstone ...	137, 145, 246
" Coal conveyed by rail from ...	173, 174
" Copper smelters in ...	190
" Persons employed in ...	48, 56, 129, 145
Waterford, Clay ...	140, 148, 162
" Gravel and sand ...	140, 148, 196
" Limestone ...	141, 149, 232
" Sandstone ...	141, 149, 247
" Persons employed in ...	58, 141, 149
Wells, Brine, dredging, &c., definition of ...	7
" County output of minerals	
" from ...	142, 143
Western Australia, Fatal accidents ...	280, 281, 321
" Mineral output ...	279, 321
" Persons employed ...	278, 320
West Virginia, Accidents at Coal Mines ...	396
" Persons employed ...	394

	Page.
Westmeath Co., Limestone ...	141, 149, 232
" Sandstone ...	141, 149, 247
" Persons employed in ...	58, 141, 149
Westmorland, Barytes ...	132, 144, 155, 156
" Basalt ...	136, 144, 157
" Clay ...	136, 144, 161
" Coal ...	128, 144, 165, 169
" Granite ...	136, 144, 194
" Gypsum ...	132, 136, 144, 196
" Lead ore ...	132, 144, 220, 222
" Limestone ...	133, 137, 145, 231
" Sandstone ...	137, 145, 246
" Slate ...	137, 145, 250, 251
" Lead smelters in ...	230
" Persons employed in ...	48, 53, 56, 129, 133, 137, 145
Wexford Co., Basalt ...	140, 148, 158
" Limestone ...	141, 149, 232
" Sandstone ...	141, 149, 247
" Slate ...	141, 149, 250
" Persons employed in ...	58, 141, 149
Whetstones, Production of :	
Bavaria ...	346
France ...	347
United States ...	395
White salt, Conveyed by railway, canal, &c. ...	244, 245
" Exported ...	245
" Produced in the United Kingdom ...	243
Wicklow Co., Copper ore ...	134, 148, 183, 184
" Granite ...	140, 148, 194
" Gravel and sand ...	140, 148, 196
" Iron pyrites ...	135, 148, 216
" Lead ore ...	134, 149, 220, 223
" Ochre ...	134, 149, 235, 236
" Persons employed in ...	54, 58, 135, 141, 149
Wigtown, Basalt ...	138, 146, 157
" Persons employed in ...	57, 139, 147
Wiltshire, Chalk ...	136, 144, 159
" Clay ...	136, 144, 161
" Gravel and sand ...	136, 144, 195
" Iron ore ...	136, 144, 199, 203
" Limestone ...	132, 137, 145, 231
" Sandstone ...	137, 145, 246
" Persons employed ...	53, 56, 133, 137, 145
" Blast furnaces in ...	206, 211
Winding-engine men, Remarks by Mr. W. N. Atkinson	
and Mr. Martin ...	74, 105
Wolfram, Output of :	
Cornish Mines ...	262, 263, 284
Austria ...	327
German Empire ...	352
Portugal ...	373
Queensland ...	315
Saxony ...	360
Spain ...	385
Worcestershire, Basalt ...	136, 157
" Clay ...	128, 136, 144, 161
" Coal ...	128, 144, 165, 169
" Gravel and sand ...	136, 144, 195
" Iron ore ...	128, 144, 199, 200
" Limestone ...	137, 145, 231
" Salt ...	143, 145, 243
" Sandstone ...	137, 145, 246
" Blast furnaces in ...	206, 211
" Copper smelters in ...	190
" Persons employed in ...	53, 56, 129, 137, 145
Workmen's Compensation Act, Remarks by Mr.	
Ronaldson, Mr. Hall, and Mr. W. N. Atkinson ...	106

Y.	
YORKSHIRE, Alum shale ...	128, 151
" Barytes ...	132, 144, 155, 156
" Basalt ...	133, 136, 144, 157
" Chalk ...	136, 144, 159
" Chert and flint ...	136, 144, 160
" Clay ...	128, 132, 136, 144, 161
" Coal ...	128, 136, 144, 165, 169
" Gravel and sand ...	129, 136, 144, 195
" Iron ore ...	128, 136, 144, 199, 200, 203
" Iron pyrites ...	128, 144, 216
" Jet ...	133, 145, 219
" Lead ore ...	132, 145, 220, 222
" Limestone ...	137, 145, 231
" Oil shale ...	129, 145, 237
" Salt ...	143, 145, 243

		Page.
Yorkshire Sandstone	...	129, 132, 137, 145, 246
" Slate	...	137, 145, 250
" Blast furnaces in	...	206, 211
" Coal conveyed by rail from	...	173, 174
" Copper smelters in	...	190
" Lead smelters in	...	230
" Persons employed in	...	48, 51, 53, 56, 129, 133, 137, 145
" Coalfield, Fatal accidents in	...	84, 85, 86
" " Mineral output	...	167, 168
" " Persons employed	...	46, 47

Z.

ZINC, Average price in the London market	..	268, 269
" Diagram shewing fluctuations in price from 1873 to 1897	...	270
" Obtainable from British ores	...	125, 263-266
" Smelters in the United Kingdom	...	268

		Page.
Zinc and zinc ore, Exported	...	267
" Imported	...	266
Zinc ore, Output of the United Kingdom	12, 125, 279,	263-266, 284, 285
Zinc or zinc ore, Output of :		
Algeria	...	279, 322
Austria	...	279, 327
Belgium	...	279, 336
France	...	279, 346
German Empire...	...	279, 352
Greece	...	279, 362
Italy	...	279, 366
Mexico	...	369
New South Wales	...	279, 311
Norway	...	279, 371
Prussia	...	357
Russia	...	279, 377
Saxony	...	360
Servia	...	378
South Australia...	...	279, 317
Spain	...	279, 385
Sweden	...	279, 388
Tunis	...	279, 391
United States	...	279, 395
Zululand, Accidents	...	280, 309
" Mineral output	...	309
" Persons employed	...	308

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**MINES AND QUARRIES:
GENERAL REPORT AND STATISTICS
For 1898.**

PART IV.—COLONIAL AND FOREIGN STATISTICS.

**STATISTICS RELATING TO PERSONS EMPLOYED, OUTPUT,
AND ACCIDENTS AT MINES AND QUARRIES IN THE
BRITISH COLONIES AND IN FOREIGN COUNTRIES.**

EDITED BY

C. LE NEVE FOSTER, D.Sc., F.R.S.,

ONE OF HER MAJESTY'S INSPECTORS OF MINES.

Presented to both Houses of Parliament by Command of Her Majesty.



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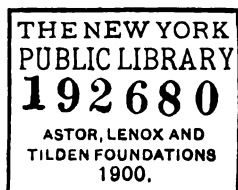
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CONTENTS.

	PAGE.
Introduction	273, 274
British Empire :—	
Summary of Persons Employed at Mines and Quarries	275
Summary of Output of certain Minerals	277
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries	278, 279
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings :—	
United Kingdom	281-283
British Colonies and Dependencies :—	
Bahamas	284
Barbados	284
Bechuanaland Protectorate... ..	284
British Central Africa Protectorate	284
British Guiana	285
British New Guinea	286
British Borneo	287
British Solomon Islands	287
Canada	287-294
Cape Colony	295-298
Ceylon	298, 299
Channel Islands	299
Cyprus	300
Federated Malay States	300-302
Gold Coast	302, 303
India	303-310
Malta	310
Natal	311
Newfoundland	312
New South Wales	312-315
New Zealand... ..	315-317
Nigeria	317
Queensland	318, 319
Redonda	319
Rhodesia	320
Sombrero	320
South Australia	320, 321
Tasmania	321, 322
Trinidad	323
Turks and Caicos Islands	323
Victoria	323, 324
Western Australia	325, 326

Foreign Countries :—

PAGE.

Summary of Persons Employed at Mines and Quarries	...	...	...	..	...	276
Summary of Output of certain Minerals	...	...	...	..	...	277
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries	...	...	...	...	...	278, 279
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings :—						
Abyssinia	...	...	...	...	...	327
Algeria	...	...	...	...	...	327-329
Arabia ...	...	...	...	...	...	329
Argentine Republic...	...	...	...	...	...	329
Austria-Hungary	...	...	...	...	...	330-338
Belgium	...	...	...	...	...	340-343
Bolivia	...	...	...	...	...	343, 344
Bosnia and Herzegovina	...	...	...	...	...	339
Brazil ...	...	...	...	...	...	344, 345
Bulgaria	...	...	...	...	...	345, 346
Canary Islands	...	...	...	...	...	346
Chili ...	...	...	...	...	...	346, 347
China ...	...	...	...	...	...	347, 348
Colombia	...	...	...	...	...	348
Congo Free State	...	...	...	...	...	349
Corea ...	...	...	...	...	...	349
Costa Rica	...	...	...	...	...	349
Cuba ...	...	...	...	...	...	349
Denmark	...	...	...	...	...	349, 350
Dutch East Indies	...	...	...	...	...	350-352
Dutch Guiana or Surinam	...	...	...	...	...	352
Dutch West Indies	...	...	...	...	...	352
Ecuador	...	...	...	...	...	353
Egypt ...	...	...	...	...	...	353
Formosa	...	...	...	...	...	353
France ...	...	...	...	...	...	354-357
French Guiana	...	...	...	...	...	357
German East Africa ...	...	...	...	...	...	358
German Empire	...	...	...	...	...	358-371
Greece ...	...	...	...	...	...	372, 373
Guatemala	...	...	...	...	...	373
Hayti ..	...	...	...	...	...	373
Holland	...	...	...	...	...	373, 374
Indo-China	...	...	...	...	...	374, 375
Italy ...	...	...	...	...	...	375-379
Japan ...	...	...	...	...	...	379, 380
Johore...	...	...	...	...	...	380
Luxemburg	...	...	...	...	...	381
Madagascar	...	...	...	...	...	381
Mexico	...	...	...	...	...	381 382

Foreign Countries—*continued.*Details relating to Persons Employed, &c.—*cont.*

	PAGE.
Morocco	382
New Caledonia	382, 383
Nicaragua	383
Norway	383, 384
Orange Free State	384
Paraguay	385
Persia	385
Peru	385, 386
Philippine Islands	386
Porto Rico	387
Portugal	387, 388
Portuguese East Africa	389
Roumania	389, 390
Russia	390-394
Sandwich Islands	394
Senegal	394
Servia	394, 395
Siam	396
South African Republic	396-400
Spain	400-403
Sweden	403-405
Switzerland	405-407
Tunis	407, 408
Turkey	408, 409
United States... ..	409-415
Uruguay	415
Venezuela	415

Index to Parts I., II., III., and IV.	417-435
--	---------

MINES AND QUARRIES:
GENERAL REPORT AND STATISTICS
For 1898.

PART IV.—COLONIAL AND FOREIGN STATISTICS.

INTRODUCTION.

The object of this volume is to present a general picture of the mineral industries of the world, for the purpose of instituting a comparison between the number of persons employed in mining at home and abroad, the quantity of minerals raised, and the accidents happening to the workpeople. Owing to the incompleteness of the data obtainable, the tables afford only an approximation to the truth ; however, in spite of this, the statistics which have been collected do afford some idea of the extent of the mineral industries of the world, and at all events form a basis for more exact particulars in future years.

According to Table 275, some 1,800,000 persons are employed in mining and quarrying in the British Empire, of whom nearly one-half are working in the United Kingdom. Foreign countries employ altogether at least $2\frac{1}{2}$ million persons.

The table of output (No. 276) was very properly criticized last year, because it stated the quantity of ore and not the quantity of metal obtainable. A country with a small output of rich ore might therefore figure as less important than a neighbour, whose output was larger in quantity, though less valuable in tons of metal. An attempt has been made to remedy this defect, but until each country supplies us with proper data, estimates must be made, and the tables cannot be completely satisfactory.

It is pleasing to notice the desire among the Mines Inspectors in some British Possessions to keep up a statistical connection with the United Kingdom. The adoption of one uniform system of mineral statistics throughout the British Empire, or indeed throughout the world, would render the task of the compiler very much easier and the general comparison very much more valuable.

The British Empire produced 220 million metric tons of coal, of which only 15 million were raised in the Colonies ; and it is interesting to note that the increase in the output of the United Kingdom last year (1899)* was more than equal to the total production of the Colonies in 1898.

Many of our Colonies are large producers of gold, and the British Empire contributed about one-third of the world's output in 1898.

* 223·6 million metric tons. *Mines and Quarries General Report and Statistics for 1899 (Advance proof)* p. 5.

In the case of iron, it must be remembered that the quantity, approaching 5 million tons, mentioned in the table, represents the amount of metal derived from British ores and not the total make of pig-iron in the country.

Salt is an important product in England and several of our Colonies, and between them they yielded more than one-quarter of the world's supply.

Although the proportion of silver furnished by the British Empire is only one-ninth of the general total, it is pleasing to note that New South Wales, with its wonderful mines at Broken Hill, is now approaching Bolivia and the German Empire in productiveness.

The British Empire produces seven-elevenths of the total tin supply of the world ; in fact the Federated Malay States alone yield more than one-half.

As regards safety, the collieries of the United Kingdom occupy a high place compared with those of the rest of the world.

It may be well to sound a note of warning to British mine-owners and point out that the parasitic disease known as ankylostomiasis is attracting the special attention of several foreign governments, owing to the ravages which it is committing among colliers. Discussions upon the subject have taken place in the Belgian Chamber of Deputies, and official pamphlets* have been recently published by the Ministry of Industry and Labour concerning the measures to be taken to stamp out the pest.

The French Coal Association has thought it advisable to issue to its members two lengthy circulars,† which are full of important information on the subject.

The Italian Government has appointed a special Commission to enquire into the disease and the best methods of putting a stop to it‡ among the Sicilian sulphur miners.

From enquiries I have made among my colleagues, it appears that the disease is not known among British colliers ; but as it has made itself a home in coal mines in Northern Europe, it might be introduced into this country by foreign workmen.

Some explanation is necessary concerning the belated appearance of this Fourth Part of the General Report. I regret to say that the delay has been caused by the illness of Mr. Jordan, the Clerk of Mineral Statistics, who has been absent from work for six months. The charge of the Mineral Statistics Branch has fallen upon his assistant, Mr. Ware, who, even by working early and late, has found it quite impossible to devote full attention to this particular Blue Book, while carrying on the general duties of the office.

C. LE NEVE FOSTER.

HOME OFFICE, WHITEHALL,
15th February, 1900.

* "Prophylaxie de l'ankylostomiasie." *Service de Santé Hygiène publique et Voirie Communale. Ministère de l'Agriculture et des Travaux Publics.* Brussels, 25th May 1899.—"Mesures à prendre contre l'ankylostomiasie." *Commission pour la révision des règlements de police sur les Mines. Séance spéciale.* Brussels, 20th July 1899.

† "Circulaire No. 1690, Belgique," and "Circulaire No. 1759, Belgique." *Comité Central des Houillères de France.* Paris, 10th June 1899, and 4th September 1899.

‡ *Rivista del Servizio minerario nel 1898.* Rome, 1899, p. 64.

S U M M A R I E S.

PERSONS EMPLOYED—OUTPUT—ACCIDENTS,
1897-1898.

TABLE No. 275.

SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the YEARS 1897 and 1898.

Country.	1897.	1898.
GREAT BRITAIN AND IRELAND	852,083	875,603
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS :—		
Bahamas	435	425
Barbados	100††	100
Bechuanaland Protectorate	*	*
British Central Africa Protectorate	*	*
British Guiana	6,550	6,590
British New Guinea	325	325**
British North Borneo	*	*
Canada (a)... ..	13,890	19,538
Cape Colony	14,318	17,065
Ceylon	310,210	310,210**
Channel Islands	1,200	1,200
Cyprus	*	*
Federated Malay States	127,930	125,580
Gold Coast... ..	2,913††	2,913
India	310,888††	310,888
Leeward Islands (Redonda)	140	140
Malta	*	*
Natal (including Zululand)	1,560	2,723
Newfoundland	*	*
New South Wales	41,208	40,830
New Zealand	16,110	15,675
Queensland	14,887	13,413
Rhodesia	*	*
South Australia	5,533††	5,533
Tasmania	5,530	6,180
Trinidad	*	*
Turks and Caicos Islands	*	*
Victoria	33,804	31,734
Western Australia	17,903	13,066
TOTAL for the BRITISH EMPIRE	1,777,517	1,799,731
FOREIGN COUNTRIES :—		
Austria-Hungary	209,030	219,227†
Bosnia and Herzegovina	1,494	1,472
Belgium	154,917	160,150
Chili	16,727†	16,727***†
Corea	1,200††	1,200§
Denmark	—	—
Greenland	104	118
France	286,347	292,821
Algeria	2,795	2,649
New Caledonia	4,347	5,090
German Empire	471,907	498,569
Greece	*	*
Holland	3,118	3,269
Dutch East Indies	23,261	22,095
Italy	89,105	94,858
Japan	118,517||	118,517||
Luxemburg	5,662	5,648
Mexico	98,852	98,852**
Norway	2,434	2,434**
Peru	105,000††	105,000
Portugal	8,162	8,560
Roumania	*	*
Russia	239,434||	239,434||
Servia	1,433||	1,433||
Siam	22,000	22,000
South African Republic... ..	85,790	100,098
Spain	65,995	75,283
Sweden	12,681	13,527
Switzerland	1,864	1,864**
United States	443,130(b)	444,578(c)
TOTAL for FOREIGN COUNTRIES	2,475,306	2,555,473
TOTAL for the WORLD	4,252,823	4,355,204

* Information not available. † Including Ozokerite Mines and Petroleum Wells for 1897.

† Persons employed in Saltpetre Works only § Employed at certain Gold Mines only.

|| Figures for 1896. ** Figures for 1897 †† Figures for 1898.

(a) For British Columbia, Nova Scotia, Ontario, and Quebec only

(b) Coal Miners only, and Ore Miners of Colorado, Houghton Co. (Michigan), and Montana.

(c) Coal Miners only, and Ore Miners of Colorado, Marquette Co. (Michigan), and Montana.

BRITISH EMPIRE.

GREAT BRITAIN AND IRELAND.

WITH THE

ISLE OF MAN.

The following Tables summarize the results of Parts II. and III. of the General Report :—

TABLE 278.

PERSONS EMPLOYED at all the MINES for the Years 1897 and 1898.

Year.	Total Number of Mines at Work.	Below-ground.			Above-ground.			Total Below and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1897	4,007	578,226	None	578,226	145,413	5,074	150,487	728,713
1898	4,002	587,297	None	587,297	148,702	5,126	153,828	741,125
Increase or decrease ...	— 5	+ 9,071	—	+ 9,071	+ 3,289	+ 52	+ 3,341	+ 12,412

TABLE 279.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the Years 1897 and 1898.

Year.	Total Number of Quarries at Work.	INSIDE THE QUARRIES, i.e., inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, i.e., outside the actual pits, holes, or excavations.			Total Number of Persons Employed Inside and Outside the Quarries.
		Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1897	6,922	58,837	8	58,845	63,063	1,462	64,525	123,370
1898	6,948	62,745	7	62,752	70,221	1,505	71,726	134,478

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 280.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, and other WORKINGS.*

Mineral.	1897.			1898.		
	Quantity.		Value at the Mines and Quarries.	Quantity.		Value at the Mines and Quarries.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alum clay (Bauxite) ...	13,327	13,541	2,823	12,402	12,601	2,898
Alum shale ...	611	621	76	13,617	13,836	1,702
Arsenic ...	4,165	4,232	74,795	4,174	4,241	53,787
Arsenical pyrites ...	13,137	13,348	10,734	11,144	11,323	8,144
Barytes ...	22,723	23,088	24,117	22,225	22,582	23,253
Bog ore ...	7,124	7,238	1,781	5,418	5,505	1,354
Chalk ...	3,858,448	3,920,367	163,595	4,298,014	4,366,987	180,651
Chert and Flint ...	93,710	95,214	16,495	82,057	83,374	14,513
Clay ...	12,705,196	12,909,084	1,453,128	14,738,474	14,970,391	1,616,358
Coal ...	202,129,931	205,373,631	59,740,009	202,054,516	205,297,006	64,169,382
Copper ore ...	7,132	7,246	18,706	9,001	9,145	25,849
Copper precipitate ...	220	223	2,320	130	132	1,300
Fluor spar ...	297	302	397	56	57	49
Gold ore ...	4,517	4,589	6,282	703	714	1,158
Granite and Syenite ...	1,847,323	1,876,968	552,604	1,875,817	1,905,919	576,457
Gravel and Sand ...	1,356,787	1,378,560	111,332	1,625,690	1,651,778	135,538
Gypsum ...	181,385	184,296	66,978	196,028	199,174	71,316
Igneous Rocks (other than Granite) ...	2,355,554	2,393,355	441,391	2,602,491	2,644,255	465,543
Iron ore ...	13,787,878	14,009,140	3,217,795	14,176,938	14,404,444	3,406,628
Iron pyrites ...	10,583	10,753	4,525	12,108	12,302	4,804
Jet ...	lbs. 84	kilos. 31	8	—	—	—
Lead ore ...	35,338	35,905	275,409	32,985	33,514	267,402
Limestone (other than Chalk) ...	11,003,524	11,180,104	1,155,993	11,980,578	12,172,837	1,256,154
Manganese ore ...	599	609	351	231	235	200
Mica ...	4,983	5,063	1,727	907	921	454
Nickel ore ...	300	305	300	—	—	—
Ochre, Umber, &c. ...	14,422	14,653	12,997	19,827	20,145	13,003
Oil shale ...	2,223,745	2,259,431	555,936	2,137,993	2,172,303	534,498
Petroleum ...	12	12	29	6	6	14
Phosphate of lime ...	2,000	2,032	3,500	1,550	1,575	2,713
Salt ...	1,903,493	1,934,039	620,898	1,878,665	1,908,813	620,115
Sandstone ...	4,964,561	5,044,230	1,525,039	5,242,115	5,326,238	1,632,786
Slates ...	609,194	618,970	1,649,576	668,859	679,592	1,900,228
Soapstone ...	28	28	98	—	—	—
Strontium sulphate ...	14,987	15,227	4,310	12,941	13,149	3,674
Tin ore (dressed) ...	7,120	7,234	254,218	7,380	7,498	288,325
Uranium ore ...	30	30	1,367	26	26	1,185
Wolfram ...	125	127	2,008	326	331	15,844
Zinc ore ...	19,278	19,587	69,154	23,552	23,930	117,784
Total values ...	—	—	72,042,801	—	—	77,415,063

* This table does not include the produce of quarries less than 20 feet deep except in the case of iron ore, ochre, phosphate of lime, strontium sulphate and tin ore.

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 281.

SUMMARY of the METALS obtainable by SMELTING from the ORES in the preceding TABLE.

Metal.	1897.			1898.		
	Quantity.		Value at the Average Market Price.	Quantity.		Value at the Average Market Price.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Aluminium	310	315	45,880	310	315	45,880
Copper	518	526	27,096	640	651	35,523
Gold	ozs. 2,032	kilos. 63	7,185	ozs. 395	kilos. 13	1,299
Iron	4,736,667	4,812,679	11,394,779	4,850,508	4,928,347	12,740,043
Lead	26,562	26,988	332,578	25,355	25,762	332,995
Nickel	7½	7½	1,050	—	—	—
Silver	ozs. 249,156	kilos. 7,750	28,614	ozs. 211,403	kilos. 6,575	23,728
Sodium	85	86	12,750	85	86	12,750
Tin	4,453	4,524	291,336	4,648	4,722	345,812
Zinc	7,049	7,162	126,923	8,574	8,712	179,482
Total values	—	—	12,268,091	—	—	13,717,512

TABLE 282.

FATAL ACCIDENTS and DEATHS at all the MINES for the Years 1897 and 1898.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate from Accidents.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Per 1,000 Persons employed Below-ground.	Per 1,000 Persons employed Above-ground.	Per 1,000 Persons employed Above and Below Ground.
1897	794	103	897	875	104	979	1·51	·69	1·34
1898	730	129	859	806	135	941	1·37	·88	1·27
Increase or decrease ...	— 64	+ 26	— 38	— 69	+ 31	— 38	— ·14	+ ·19	— ·07

TABLE 283.

DEATHS from ACCIDENTS at QUARRIES* during the Years 1897 and 1898.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate per 1,000 Persons employed.		
	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.
1897	89	29	118	93	30	123	1·58	·46	1·00
1898	97	34	131	100	34	134	1·59	·47	1·00
Increase or decrease ...	+ 8	+ 5	+ 13	+ 7	+ 4	+ 11	+ ·01	+ ·01	—

* More than 20 feet deep.

BRITISH COLONIES AND DEPENDENCIES.

Bahamas.*

Bay salt is produced in the Bahamas by the solar evaporation of sea water. During the years 1897 and 1898 the number of persons employed was 435 and 425 respectively. The principal producers are the islands of Inagua, Rumcay, and Exuma.

The output which has considerably fallen off in 1898 was as follows :—

TABLE 284.

	Year.	Quantity.		Value.
		Statute Tons.	Metric Tons.	£
	1897	3,109	3,159	1,501
	1898	1,512	1,536	800

Barbados.†

The most important mineral product of the island is “manjak,” a variety of glance pitch occurring in veins which traverse deposits of infusorial earth. The largest mine employs more than a hundred hands. The mineral is sold on the island at prices varying from 3*l.* 10*s.* to 7*l.* 10*s.* a ton; the superior qualities are used for making varnish, and the less valuable kinds for insulating purposes. The quantity exported in 1897 was 1880 tons.

Petroleum has been discovered, and the value of the deposits is now being tested by bore-holes.

Bechuanaland Protectorate.‡

Little is known about the mineral wealth of this country; though a small seam of good coal has been discovered close to the railway in the Northern Protectorate.

British Columbia. (See under CANADA.)

British Central Africa Protectorate.§

Coal is being worked on a small scale on the Upper Zambesi.

A considerable amount of prospecting for gold is going on in the Central Angoniland District.

* Official Return furnished by the Colonial Secretary, Nassau.—Bell “Bahamas Annual Report for 1897.” *Colonial Reports*—Annual, No. 238.—London, 1898 [C. 9046-6], p. 11.—*Blue Books for Bahamas for 1897 and 1898*.

† Williams “Barbados Annual Report for 1897.” *Colonial Reports*—Annual, No. 231.—London, 1898 [C. 8650-29], pp. 12 and 22.

‡ Newton “Bechuanaland Protectorate Annual Reports for 1896-7.” *Colonial Reports*—Annual, No. 226.—London, 1898 [C. 8650 24], p. 8.

§ Commissioner Sharpe “Trade and General Condition of British Central Africa Protectorate for the Years 1898-99.”—*Dipl. and Cons. Reports*, No. 2327, Ann. Ser., 1899 [C. 9044-153], p. 14.—Acting Vice-Consul Hillier “Trade of Chinde for the Year 1898.”—*Dipl. and Cons. Reports*, No. 2328, Ann. Ser., 1899 [C. 9044-154] p. 3.

British Guiana.*

Like the adjoining part of Venezuela, the British Colony is gold-bearing in many places ; the gold is obtained mainly from alluvial deposits, though much rich auriferous quartz exists. There has been little vein-mining up to the present time. The gold industry shows a falling off of more than 8,000 ozs. during the year 1898-1899.

TABLE 285.

PERSONS EMPLOYED at MINES, ALLUVIAL WORKINGS, and QUARRIES during the Years 1897-8 and 1898-9.

Kind of Workings.	1897-8.	1898-9.
Mines and Alluvial or Placer diggings	6,500	6,500
Granite Quarries... ..	50	90

TABLE 286.

QUANTITY and VALUE of the MINERALS produced in 1897-8 and 1898-9.

Mineral.	Financial Year 1897-8.			Financial Year 1898-9.		
	Quantity.		Value.	Quantity.		Value.
	Ozs.	Kilos.	£	Ozs.	Kilos.	£
Gold	121,490	3,779	443,366	113,114	3,517	406,503
Granite... ..	Statute Tons. 3,110	Metric Tons. 3,159	1,944	Statute Tons. 6,459	Metric Tons. 6,562	4,036
Total value	—	—	445,310	—	—	410,539

The table below shows the output of the principal districts.

TABLE 287.

Gold obtained.

District.	Financial Year 1897-8.	Financial Year 1898-9.
	Ozs.	Ozs.†
Barima	20,309	
Cuyuni	26,569	
Essequibo	23,091	
Potaro	33,288	
Other districts	18,233	
Total output in ozs. ...	121,490	113,114
„ „ kil. ...	3,779	3,517

* Official Return furnished by the Department of Mines, Georgetown.

† Details not available.

BRITISH GUIANA—*continued.*

TABLE 288.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1897-8 and 1898-9.

Kind of Workings.	1897-8.		1898-9.	
	Persons Killed.	Death-rate per 1,000 Persons employed.	Persons Killed.	Death-rate per 1,000 Persons employed.
Gold mines	1	1·08	1	·31
Alluvial or Placer diggings ...	6		1	
Granite Quarries	—	—	1	11·11

British New Guinea.*

Prospecting in New Guinea is no easy task, owing not only to physical difficulties, but also to attacks from the natives; consequently there is no reason for surprise that the mining industry makes slow progress. The number of ounces of gold exported in 1897-8 was, in fact, somewhat less than in the previous year, but the value slightly greater. The gold is obtained solely from alluvial deposits.

TABLE 289.

Year.	Gold produced.		Value.
	Ozs.	Kil.	£
1896-97	7,148	222	25,018
1897-98	6,830	213	25,612

British Borneo.

BRUNEI.†

The only mines worked are at Muara, which exports about 14,000 tons of coal annually.

LABUAN.

Coal is worked in the island of Labuan, and its harbour is now an important coaling station.

The output ‡ of coal in 1897 was as follows :—

TABLE 290.

Year.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£
1897	34,841	35,400	18,536
1898	—	—	—

The coal is stated to be very suitable for steamships, and it is used for tin-smelting at Singapore.

* *Annual Report on British New Guinea for 1897-98*, Brisbane, 1899, and Lt.-Gov. Sir W. Macgregor "British New Guinea Annual Reports for 1897-8," *Colonial Reports—Annual*, No. 258.—London, 1899. [C. 9046-26].

† Consul Keyser "Trade of Borneo and Sarawak for the Year 1898."—*Dipl. and Cons. Reports*, No. 2322, Ann. Ser. 1899 [C. 9044-147], p. 5.

‡ *Blue Book for Labuan for 1897*. Figures for 1898 not yet available.

BRITISH BORNEO—*continued.*

NORTH BORNEO.*

The existence of coal, copper, gold, and other minerals has been proved ; gold is the only one which is being worked at the present time. It is being obtained by a steam dredger from the bed of the Segama River.

SARAWAK.†

The known mineral resources of Sarawak are deposits of antimony ore, coal, diamonds, gold, and petroleum.

Antimony.—The Borneo Company has extensive works at Busoh in Upper Sarawak.

Coal.—The Government works mines at Sadong and Brooketon. The former produces about 40,000 tons a year, and the latter 12,000 tons.

Diamonds.—The gems are found in very small quantities.

Gold.—Gold is being extracted from quartz by the cyanide process ; and Chinamen earn a living by working alluvial deposits in Upper Sarawak.

British Solomon Islands.‡

Copper ore has been found in the Protectorate.

Brunei. (See BRITISH BORNEO.)

Canada.

Asbestos.—The Canadian asbestos, which mineralogically is chrysotile, occurs in small veins in serpentine in the eastern townships of the province of Quebec.

Chromic Iron Ore.§—This ore is obtained from irregular pockets in the serpentine of the province of Quebec.

Coal.—The coalfields, which have been most largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent bituminous coal is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, and Springhill coalfields, in Nova Scotia. The coal of the Pacific coast, which, on the other hand, is of Cretaceous age, is derived from collieries at Nanaimo, Wellington, and Comox, in Vancouver Island. Coal likewise occurs in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams occurring near Cochrane improve in quality, and yield bituminous coal. Further west, again, is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of the Rocky Mountains, where the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel is now rendered available for industrial purposes by a branch line by the Canadian Pacific Railway Company. All these coals are of Cretaceous age.

Copper.—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec. In the first of these provinces copper pyrites occurs in connexion with pyrrhotite and gold, especially at the rising town of Rossland, whose mines are already supplying large and important smelting works.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous ; large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the east for the extraction of the two metals.

* *The Colonial Office List for 1899*, p. 316.

† *Ibid.* p. 319 and Consul Keyser "Trade of Borneo and Sarawak for the Year 1898."—*Dipl. and Cons. Reports*, No. 2322, Ann. Ser. 1899 [C. 9044-147], p. 9.

‡ Woodford "British Solomon Islands Annual Report for 1897-8," *Colonial Reports—Annual*, No. 251.—London, 1898 [C. 9016-19].

§ Obalski, *Chromic iron in the Province of Quebec*.—Department of Colonization and Mines, January, 1898.

CANADA—continued.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metal is abstracted.

Gold.—At the present time the chief gold-producing provinces of the Dominion are British Columbia, the Yukon region of the North-West Territories, Nova Scotia, and Ontario.

The alluvial deposits which made the Cariboo district so famous about the year 1859 are very far from being exhausted, and are being worked by the hydraulic and other methods. Dredging the beds of rivers is being attempted in several places. The auriferous copper ores of the Rossland district are largely swelling Canada's output of the precious metal. Workable deposits of gold are by no means confined to the two districts of British Columbia just named; in fact, the metal is found in greater or less quantities in very many parts of this immense, but thinly inhabited and imperfectly explored, province.

At the present moment all gold-producing districts sink into insignificance when one reads of the productiveness of the diggings in the far north-west of the Dominion at the head waters of the Yukon River and its tributaries, such as the Klondike.

The gold of Nova Scotia is derived from free-milling quartz veins, and it is encouraging to note that the production of the province is increasing.

Ontario is not yet producing a large quantity of gold, though the labours of prospectors have proved the existence of auriferous veins over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east. The output from various stamp mills affords good grounds for believing that gold mining will become an important industry in Ontario.

Granite and Miscellaneous Building Stones.—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

Graphite.—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks.

Gypsum.—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occurs in the form of spotlessly white alabaster. Ontario, likewise, produces gypsum.

Iron Ore.—Though endowed with large supplies of iron ore in many of its provinces, the Dominion of Canada is as yet a small producer, for its total output is considerably less than one-hundredth that of the United States.

Lead Ore.—The mineral resources of British Columbia are by no means confined to gold. This province is a large producer of argentiferous lead ore, and the new discoveries of the Kootenay district render it probable that the output will go on increasing.

Mercury.—The only cinnabar mine in the Dominion was opened a short time ago on Kamloops Lake in British Columbia, near the Canadian Pacific Railway.

Mica.—This mineral is beginning to be mined more extensively in various places. The "white mica" (muscovite) occurs in granite and felspar veins, whilst the "amber mica" (phlogopite) is associated with apatite in pyroxenic rocks.

Natural Gas.—The Lower Silurian rocks, when buried, yield areas containing natural gas in a few places, such as at Port Colborne and Kingsville, in Southern Ontario.

Nickel.—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The present supply could be very largely increased.

Petroleum.—The principal petroleum district at the present time is in Southern Ontario, and the value of the output forms an important item in the statistics of the Colony.

Phosphate of Lime.—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from Florida, prices have dropped, and working the Canadian apatite is no longer so profitable as it was.

CANADA—continued.

Salt.—Thick beds of salt occur in Southern Ontario, in the Onondago division of the Silurian rocks. The brine is pumped up and evaporated.

Silver.—The lead ores of British Columbia are often highly argentiferous, and to the increased yield of the Kootenay district must be ascribed the notable rise in the production of silver in the Dominion.

The rich silver ores in the Thunder Bay district of the province of Ontario are not being largely worked at the present time.

Slate.—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.

TABLE 291.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1897 and 1898.*

Mineral or other product.	1897.†			1898.‡		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Actinolite ...	205	208	379	—	—	—
Asbestos ...	30,442	30,932	91,513	21,237	21,578	99,910
Baryta ...	571	580	629	955	970	1,080
Coal ...	3,786,107	3,846,865	1,500,739	3,725,585	3,785,372	1,690,676
Coke ...	60,686	61,660	36,258	64,682	65,720	45,041
Copper (fine, contained in ore).	5,938	6,033	308,560	8,014	8,143	443,744
Felspar ...	1,400	1,422	676	2,532	2,568	1,284
Fireclay ...	2,118	2,152	1,183	1,937	1,968	1,027
Flagstones ...	—	—	1,477	—	—	873
Gold (Fine) ...	ozs. 291,582	kil. 9,069	1,238,428	ozs. 709,776§	kil. 22,076	3,015,069
Granite ...	10,345	10,511	12,726	—	—	15,118
Graphite ...	436	443	3,337	—	—	2,280
Gravel and Sand ...	152,963	155,418	15,766	—	—	—
Grindstones ...	4,572	4,645	8,699	—	—	8,109
Gypsum... ..	239,691	243,538	50,246	195,764	198,906	47,350
Iron ore... ..	50,705	51,519	26,772	51,929	52,762	31,338
„ chromic ...	2,637	2,679	6,673	1,804	1,833	4,982
Lead ...	17,419	17,699	287,025	14,248	14,477	247,890
Limestone for flux in smelting iron ore.	31,273	31,775	6,217	30,280	30,766	6,401
Manganese ore... ..	15	15	240	45	46	329
Mercury ...	lbs. 688	kilos. 256	67	—	—	—
Mineral water ...	galls. 749,691	litres 3,406,190	29,071	—	—	31,849
Mica ...	—	—	15,616	—	—	24,164
Natural gas ...	—	—	66,960	—	—	65,753
Nickel ...	1,785	1,814	287,502	2,463	2,503	374,145
Ochres ...	3,905	3,968	4,841	2,089	2,123	3,821
Petroleum ...	galls. 24,844,995	litres 112,882,191	207,852	galls. 24,527,650	litres 111,440,348	201,597
Phosphate of lime ...	908	923	819	654	665	753
Platinum ...	—	—	329	—	—	—
Pyrites (Copper and Iron).	38,910	39,534	23,986	28,766	29,228	26,481
Salt ...	51,348	52,172	46,383	51,020	51,839	51,090
Sand (moulding) ...	5,485	5,573	2,246	9,489	9,590	4,323
Silver (Fine) ...	ozs. 5,558,446	kilos. 172,885	682,889	ozs. 4,320,575	kilos. 134,385	530,815
Slate ...	—	—	8,794	—	—	8,382
Soapstone ...	157	160	72	—	—	—
Tripolite ...	15	15	32	908	922	3,423
Building materials :—						
Bricks ...	—	—	—	—	—	—
Building stone ...	—	—	—	—	—	—
Cement, natural ...	—	—	—	—	—	—
„ Portland ...	—	—	—	—	—	—
Lime ...	—	—	862,962	—	—	917,857
Pottery ...	—	—	—	—	—	—
Sewer pipe ...	—	—	—	—	—	—
Terra cotta ...	—	—	—	—	—	—
Tiles ...	—	—	—	—	—	—
Total value ...	—	—	5,837,964	—	—	7,906,954

* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1897 and 1898.

† Revised figures.

‡ Preliminary Return, subject to revision.

§ Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

CANADA—*continued*.

The general improvement which took place in 1898 is best described in the words of the Geological Survey department* :—

“ It will be observed that most of the large increase in the total is to be credited to the metals gold, copper, nickel ; the non-metallic materials, coal, asbestos, and cement also contributing. Beginning with the most important, the increases in these products were as follows, viz. :—Gold, about \$7,673,000 (£1,576,644) ; coal, over \$524,000 (£189,863) ; copper, nearly \$658,000 (£135,205) ; nickel, nearly \$422,000 (£86,712) ; asbestos, iron, and cement aggregating about \$185,000 (£38,014).

“ Of the gold output the main feature was the very large increase in that of the Yukon. This accounts for \$7,500,000 (£1,541,096) of the enlargement, which is three times as great an estimated output as that for last year. With the exception of the gold washings of the Saskatchewan river in the North-west Territories, there were also increases in all the other districts of the Dominion.

“ There were increased outputs of coal in all the different districts. In copper, the largest increase was in Ontario, which amounted to over 50 per cent. of the previous year's output. British Columbia also showed a considerable enlargement, whilst in Quebec a small falling off was apparent. A rise in the price of the metal makes the proportional increase in value greater than that for quantity.

“ In nickel, the increase in the quantity is greater than that in the value, owing to a fall in the average price of the metal for the year.

“ The falling away in the production of both lead and silver is, in the former case, partly offset by the rise in the average price, whilst in the latter case, a lower price for the year has aggravated the proportional decrease in the value as compared with the quantity.

“ Whilst there was a decrease in the actual quantity of the product of the asbestos mines of Quebec, the value shows a large percentage increase, which is explained by the lesser proportion of asbestic and low grade fibre in the output.”

The Statistical Year book of Canada for 1897† contains a brief *resumé* of those parts of the mining laws of the Dominion and of the several provinces, which deal with the acquisition of mineral claims.

The “ Placer Mining Act, 1891 ” of British Columbia has been amended in 1898 and 1899.

Regulations governing placer mining and river dredging in the provisional district of the Yukon have been issued by the Government.‡ The official pamphlet contains useful diagrams, explaining how the various kinds of claims are to be staked out.

The mining industries of some of the provinces of the Dominion are sufficiently important to deserve separate notices.

BRITISH COLUMBIA.§

At the present time the principal mining regions of British Columbia are the Kootenay, Cariboo, Omenica, and Cassiar ; though their wealth depends largely upon gold, other valuable minerals are known to occur, and it is impossible to say what may not still be found in a country so thinly populated and so imperfectly prospected.

In the Kootenay region there are the important gold mines of Rossland, and the silver lead mines of Slocan ; whilst the valuable seams of coal near the Crow's Nest Pass have now been opened up by the Canadian Pacific Railway.

* *Summary of the Mineral Production of Canada for 1898*, published by the Geological Survey of Canada, pp. 6 and 7.

† Issued by the Department of Agriculture, Ottawa, 1898.

‡ Ottawa, 1898.

§ *Annual Reports of the Minister of Mines for British Columbia for 1897 and 1898*. Victoria.

CANADA.—BRITISH COLUMBIA—*continued.*

The rich alluvial gold beds of Cariboo attracted diggers forty years ago, and are now affording large quantities of the precious metal to companies employing hydraulic mining.

Omenica and Cassiar, lying to the north, form a link between Cariboo and its latest and now best-known rival Klondike.

TABLE 292.

PERSONS EMPLOYED at COAL MINES during the Years 1897 and 1898.

1897.			1898.		
Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
—	—	2,413	2,029	812	2,841

TABLE 293.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	882,854	897,022	544,225	1,135,865	1,154,093	700,190
Coke	17,832	18,118	18,320	35,000	35,562	35,959
Copper	2,377	2,415	54,701	3,246	3,298	179,750
Gold, Alluvial... ..	ozs. 25,676	kilos. 798	105,517	ozs. 32,167	kilos. 1,001	132,194
" from quartz veins, &c.	ozs. 106,141	kilos. 3,301	436,195	ozs. 110,061	kilos. 3,423	452,306
Lead	17,340	17,618	285,728	14,149	14,376	221,421
Silver	ozs. 5,472,971	kilos. 170,228	672,502	ozs. 4,292,401	kilos. 133,509	488,187
Other minerals	—	—	31,151	—	—	31,130
Total value	—	—	2,148,339	—	—	2,241,136

TABLE 294.

DEATHS from ACCIDENTS at COAL MINES during the Years 1897 and 1898.

Cause of Accident.					No. of Persons Killed.	
					1897.	1898.
<i>Underground:</i>						
Falls of coal ... ..	...	...	...	...	1	3
" rock ... ..	...	...	...	...	2	1
Explosion of gas ... ..	...	...	...	...	—	2
Crushed by car ... ..	...	...	...	...	3	1
<i>Surface:</i>						
Railways ... ..	...	...	...	...	—	—
Total ... ..	...	...	...	...	6	7

CANADA.—BRITISH COLUMBIA—*continued.*

TABLE 295.

DEATH-RATE from ACCIDENTS at COAL MINES during the Years 1897 and 1898.

1897.			1898.		
Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
—	—	2.49	3.45	—	2.46

During the latter six months of the year 1898 six persons were killed at metalliferous mines, but as no complete statistics of persons employed at these mines are given, the death-rate cannot be calculated.

The Coal Mines Regulation Act of this Province contains a section prohibiting the employment of Chinamen underground, as it is considered by some persons that such employment would be a source of danger to the lives of the other workmen. The question of the legality of the enactment has lately been brought before the Judicial Committee of the Privy Council, who have decided* that the Provincial Legislature acted *ultra vires* in framing such a section; consequently Chinamen may be employed below-ground in the coal mines.

NOVA SCOTIA.†

TABLE 296.

PERSONS EMPLOYED at COAL MINES during the Years ended 30th September 1897 and 1898.

Year.	Under-ground.			Above-ground.			Construction.			Total.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1897	3,320	506	3,826	1,121	180	1,301	47	1	48	5,175
1898	2,850	464	3,314	1,011	166	1,177	93	3	96	4,587

The average numbers of persons employed at gold mines during the years ending 30th September 1897 and 1898 were 715 and 616 respectively.

TABLE 297.

QUANTITY of MINERALS produced during the Years ending 30th September 1897 and 1898.

Mineral.	Year ending 30th September 1897.		Year ending 30th September 1898	
	Quantity.		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Coal	2,320,916	2,358,161	2,281,454	2,318,066
Coke	45,000	45,722	42,000	42,674
Gold	ozs. 26,964	kilos. 838	ozs. 31,104	kilos. 967
Gypsum (exported) ..	125,000	127,006	131,000	133,102
Iron ore	44,146	44,854	31,050	31,548
Limestone	25,000	25,402	24,000	24,385
Manganese ore	100	102	75	76

* *The Times*, 29th July, 1899, p. 3.† *Reports of the Department of Mines for Nova Scotia, 1897 and 1898, Halifax*

CANADA.—NOVA SCOTIA—continued.

TABLE 298.

DEATHS from ACCIDENTS at MINES during the Years ending 30th September 1897 and 1898.

Year.	Kind of Mines.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
1897 ...	Coal	7	1.35
	Gold	1	1.40
1898 ...	Coal	13	2.83
	Gold	4	6.49

ONTARIO.*

TABLE 299.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1897 and 1898.

Kind of Working.	1897.	1898.
Copper and nickel	535	637
Gold	430	580
Iron ore	130	100
Silver	—	59
Other workings	1,207	6,119
Total	2,302	7,495

TABLE 300.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral or other Product.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Calcium carbide	513	521	7,077	929	944	11,502
Copper	2,453	2,494	41,110	3,738	3,798	55,085
Gold... ..	ozs. 11,412	kilos. 355	39,091	ozs. 16,261	kilos. 505	56,523
Graphite	357	363	1,747	268	272	1,233
Gypsum	1,544	1,569	3,688	2,679	2,722	822
Iron ore	21,438†	21,782	59,104	24,472	24,865	10,048
Mica	—	—	—	30	30	1,541
Natural gas	—	—	63,380	—	—	61,973
Nickel	1,785	1,814	73,901	2,039	2,072	105,662
Petroleum (crude)... ..	galls. 25,556,591	litres 116,115,298	219,273	galls. 26,978,977	litres 122,577,849	230,712
Salt	48,827	49,611	51,345	53,022	53,873	57,305
Silver	—	—	—	ozs. 86,600	kilos. 2,894	10,677
Building materials:—						
Bricks, tiles, pipes, &c.	—	—	44,897	—	—	254,660
Building stone, &c.	—	—	—	—	—	154,110
Cement, Portland	barrels 96,925	—	34,994	barrels 153,348	—	62,075
“ rock	“ 84,670	—	15,642	“ 91,528	—	15,251
Lime	—	—	—	bushels 2,620,000	decalitres 9,523,086	63,287
Total value	—	—	655,349	—	—	1,152,461

* Reports of the Bureau of Mines for Ontario for 1897 and 1898, Toronto.

† Pig iron made at blast furnaces. The quantity of Ontario iron ore used is not stated in the Report.

CANADA.—ONTARIO—*continued.*

TABLE 301.

NUMBER of DEATHS from ACCIDENTS at MINES during the Years 1897 and 1898.

Kind of Mine.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1897.	1898.	1897.	1898.
Copper	—	2	—	3.14
Gold	1	2	2.33	3.45
Silver	—	1	—	16.95

QUEBEC.*

This Province employs about 4,000 persons in mining and quarrying, of whom one-fifth are engaged in getting asbestos, the most important mineral.

TABLE 302.

OUTPUT and VALUE of MINERALS during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Statute Tons.	Metric Tons.	Value.	Statute Tons.	Metric Tons.	Value.
Asbestos	22,647	23,010	78,082	20,549	20,879	105,053
Barytes	—	—	—	49	50	57
Chrome iron	2,340	2,378	6,734	1,805	1,834	5,137
Copper ore	36,835	37,426	27,479	35,686	36,259	29,565
Felspar	1,116	1,134	822	1,786	1,815	1,027
Flagstones	957	972	1,438	845	859	736
Gold	ozs. 50	kilos. 1	185	ozs. 370	kilos. 11	1,336
Graphite	—	—	—	76	77	1,747
Iron ores	19,766	20,083	8,470	13,385	13,600	7,807
Mica	—	—	10,274	246	250	16,644
Ochre	1,107	1,125	2,548	1,170	1,189	2,692
Phosphate	—	—	—	777	789	1,228
Slate	4,650	4,725	7,726	3,064	3,113	7,680
Zinc and lead ores	430	437	1,089	1,300	1,321	4,500
Building materials...	—	—	156,575	—	—	158,630
Total value	—	—	301,422	—	—	343,839

* Obalski, *Report on the Mines of the Province of Quebec for the year 1898*, Department of Colonization and Mines, March 1899.

Cape Colony.*

Though the diamond industry overshadows all other kinds of mining in the Colony, the extraction of coal is gradually assuming more importance, whilst copper ore has long been a notable article of export.

Coal.—As shown by Table 304, the total output of coal now reaches more than 170,000 tons a year. Of this amount, Indwe produced more than one-half; the rest came from collieries at Cyphergat, Sterkstroom, Molteno, &c.

Copper Ore.—Namaqualand produces all the copper ore; apparently the copper mines are not under official inspection.

Diamonds.—Exclusive of the river diggings, there are now nine separate diamond mines in the Kimberley district, viz., Bultfontein, De Beers, Du Toit's pan, Kamfersdam, Kimberley, Otto's Kopje, Premier (Wesselson), St. Augustine's, and Theron's. Of these, De Beers is far the most largely worked at the present time, for it employs nearly one-half of the mining population of the district; next comes Kimberley employing about one-fifth of the total. No work was done at Du Toit's pan in 1898, and St. Augustine's was abandoned.

In addition to the Kimberley Mines, there are a few unimportant diamond mines in the Barkly West Division, besides alluvial diggings.

TABLE 303.
PERSONS EMPLOYED † during the Years 1897 and 1898.

Class of Mine.	Under-ground.			Above-ground.			Total for 1898.			Total for 1897.
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.	
Coal ...	95	2,283	2,378	52	550 ‡	602	147	2,833	2,980	2,192
Copper Ore...	63	532	595	115	1,092	1,207	178	1,624	1,802	1,709
Diamond ...	425	4,040	4,465	1,565	6,253	7,818	1,990	10,293	12,283§	10,417¶

TABLE 304.
QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos ... (exported)	46	47	490	149	151	2,037
Coal ...	113,851	115,878	91,001	171,301	174,050	135,851
Copper ore ...	38,977	39,603	384,879	36,822	37,413	310,636
Crocidolite ... (exported)	15	15	1,676	8	8	700
Diamonds ...	carats 3,052,640	kilos. 627	3,821,771	carats 3,270,917	kilos. 672	4,128,321
Fireclay ...	440	447	Not stated.	1,240	1,260	Not stated.
Gold ...	oss. 76	kilos 2	266	oss. 127	kilos. 4	444
Salt, white ...	bushels 305,139 tons 8,173||	8,304	19,580 {	bushels 442,380 tons 11,850||	12,040	32,598
Total value ...	—	—	4,319,663	—	—	4,610,587

* Statistical Registers for 1897 and 1898, Cape Town, and Reports of the Inspector of Mines for Kimberley, &c., for 1898, Cape Town.

† Exclusive of a few persons employed in getting asbestos and salt.

‡ 284 of these persons were females.

§ These figures relate to Kimberley mines only.

|| Estimated at 60 lbs. = 1 bushel.

CAPE COLONY—continued.

TABLE 305.
DEATHS from ACCIDENTS during the Year 1898.

Class of Mine.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	8	3	11	3.36	4.98	3.69
Copper ore	—	—	Not stated.	—	—	—
Diamond (Kimberley Mines).	36	16	52	8.06	2.05	4.23
Total for Coal and Diamond Mines.	44	19	63	6.43	2.26	4.13

*Kimberley Diamond Mines.**

TABLE 306.
PERSONS EMPLOYED during the Years 1897 and 1898.

Year.	Under-ground.			Above ground.			Total.		
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total
1897 ...	397	3,539	3,936	1,500	4,981	6,481	1,897	8,520	10,417
1898 ...	425	4,040	4,465	1,565	6,253	7,818	1,990	10,293	12,283

TABLE 307.
DEATHS from ACCIDENTS during the Years 1897 and 1898.

Year.	Place.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
1897 ... {	Under-ground ...	3	21	24	7.56	5.93	6.10
	Above-ground ...	2	8	10	1.33	1.61	1.54
	Total... ..	5	29	34	2.63	3.40	3.26
1898 ... {	Under-ground ...	—	36	36	—	8.91	8.06
	Above-ground ...	—	16	16	—	2.56	2.05
	Total... ..	—	52	52	—	5.05	4.23

The death-rate from accidents at Kimberley still continues high ; some of the causes which conduce to the great sacrifice of life are set forth in my General Report for 1897 (page 276).

The worst kind of accident is the "mud-rush," i.e., a sudden inrush of mud, which may fill up several hundred yards of level, and bury the workmen or confine them for many hours or even several days. One quarter of the death-roll in 1898 was due to mud-rushes.

* Reports of the Inspector of Mines for Kimberley, &c., for 1897 and 1898, Cape Town.

CAPE COLONY—continued.
Kimberley Diamond Mines—continued.

TABLE 308.
CAUSES of ACCIDENTS in 1897.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes... ..	1	1	1	2	—	—	—
Falls of ground	29	—	11	11	2	19	21
Falling down "passes"	5	—	2	2	—	3	3
Falling down shafts	2	2	1	3	—	—	—
Falls from ladders... ..	2	—	1	1	—	1	1
Whilst ascending or descending shafts by machinery.	1	—	—	—	1	—	1
Ground falling from bucket whilst sinking shafts.	2	—	—	—	—	2	2
On tramways or by trucks ...	10	—	1	1	1	8	9
Blasting	10	—	4	4	4	6	10
Miscellaneous	3	—	—	—	—	3	3
Total	65	3	21	24	8	42	50
<i>Surface and Open Works.</i>							
Falls of ground and débris ...	7	1	2	3	—	8	8
On tramways or by trucks ...	28	—	—	—	—	29	29
Machinery	11	—	3	3	1	7	8
Blasting	3	—	1	1	1	1	2
Miscellaneous	12	1	2	3	4	11	15
Total	61	2	8	10	6	56	62
Totals (above and below ground)	126	5	29	34	14	98	112

TABLE 308—continued.
CAUSES of ACCIDENTS in 1898.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes	4	—	13	13	—	2	2
Falls of ground	60	—	8	8	5	51	56
Falling down " passes "	4	—	3	3	—	1	1
Falls from ladders... ..	11	—	1	1	—	10	10
Whilst ascending or descending shafts by machinery.	3	—	6	6	2	16	18
Machinery in shaft	4	—	1	1	—	3	3
On tramways or by trucks	9	—	—	—	—	9	9
Ground and timber falling down shaft.	3	—	1	1	1	1	2
Ground and timber falling down " pass."	2	—	—	—	—	2	2
Blasting	6	—	3	3	—	7	7
Miscellaneous	2	—	—	—	—	2	2
Total	108	—	36	36	8	104	112

CAPE COLONY—*continued.**Kimberley Diamond Mines—continued.*Table 308—*continued.*CAUSES of ACCIDENTS in 1898—*continued.*

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Surface and Open Works.</i>							
Falls of ground and débris ...	17	—	5	5	—	14	14
On tramways or by trucks ...	61	—	6	6	8	47	55
Falling down open works ...	1	—	—	—	1	—	1
Machinery	7	—	1	1	—	6	6
Collapse of bridge at washing plant.	1	—	2	2	—	1	1
Blasting	4	—	2	2	—	6	6
Miscellaneous	5	—	—	—	2	3	5
Total	96	—	16	16	11	77	88
Totals (above and below ground)	204	—	52	52	19	181	200

In addition to the deaths at Kimberley, the following accidents were reported, during the year 1898, from other workings for diamonds* :—

One white person was killed at Leicester Mine, and one coloured person at Otto's Prospect Mine ; both deaths being caused by falls of ground.

As the number of persons employed is not stated, no death-rate can be calculated.

Ceylon.†

Plumbago is the most important mineral produced in Ceylon ; it occurs in gneiss and mica schist, and the workings are sometimes carried on to a depth of 150 yards.

The diggings for precious stones, such as rubies, sapphires, spinels, chrysoberyls, garnets, zircons, and moonstones, are not very important.

The salt is obtained from salt lagoons or " pans."

" Cabook " is a local name for laterite, the most useful building stone in the island.

TABLE 309.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1896 and 1897.

Kind of Workings.	Under-ground.			Above ground.			Total Number of Persons Employed in Mines and Mineral Workings.
	Males.	Females.	Total.	Males.	Females.	Total.	
Mines	9,486	20	9,506	12,938	2,208	15,146	24,652
Mineral Workings	33,371	2,265	35,636	151,232	98,690	249,922	285,558
Total for 1897 ...	42,857	2,285	45,142	164,170	100,898	265,068	310,210
Total for previous year.	38,847	2,187	41,034	161,540	86,134	247,674	288,708

* Report of the Inspector of Mines for Kimberley, &c., for 1898, Cape Town

† Official Return furnished by the Government of Ceylon and Blue Books of Ceylon, Colombo, for 1897 and 1898.

CEYLON—continued.

TABLE 310.

QUANTITY and VALUE of the MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Granite	cubes 5,063	—	1,920	cubes 157,295	—	86,004
Grinding stones	(a) Nr. 228	—	33	pkges. 525	—	52
Mica	(a) 8	8	1,063	{ (a) 4	4	547
Plumbago	(a) 18,971	19,275	231,977	{ (a) pkges. 10	—	1,901,906
Precious stones and pearls ...	(a) pkges. 15	—	731	Nr. 111	—	570
Salt	3,407	3,462	9,684	31,911	32,423	89,178
Stone for building :— "Cabook"	blks. 1,618,610	—	3,074	blks. 2,149,166	—	3,470
Talc	—	—	—	4	4	400
Total value	—	—	248,485	—	—	2,082,127

(a) Exported.

TABLE 311.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS during the Years 1896 and 1897.

Kind of Workings.	Under-ground.			Above-ground.			Total Below and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	11	—	11	1	—	1	12	1·16	·07	·49
Openworks...	—	—	—	1	1	2	2	—	·01	·01
Total for 1897.	11	—	11	2	1	3	14	·24	·01	·05
Total for previous year.	12	—	12	2	—	2	14	·29	·01	·05

Channel Islands.

The average number of persons employed each year in the stone quarrying industry of the Channel Islands is about 1,200.

TABLE 312.

QUANTITY and VALUE of STONE exported during the Years 1897 and 1898.*

Mineral and Islands where obtained.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Guernsey and Jersey : Stone, dressed or rough (exported).	331,128	336,442	195,787	346,014	351,567	190,796
Total value	—	—	195,787	—	—	190,796

* Annual Statistics of Trade of the United Kingdom for 1898, p. 894.

Cyprus.*

TABLE 313.

QUANTITY and VALUE of the MINERALS produced during the Financial Years 1896-7 and 1897-8.

Minerals.	1896-7.			1897-8.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper (exported)	11	11	49	19	19	483
Gypsum "	3,721	3,781	1,683	3,821	3,882	1,557
Salt "	1	1	3	1	1	2
Umber ...	1,537	1,562	777	2,863	2,909	960
Total value ...	—	—	2,512	—	—	3,002

In addition to these minerals, sandstone and limestone are quarried for building and other purposes ; but the quantities are unknown.

Federated Malay States.†

The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The ore is obtained almost exclusively from alluvial deposits worked as open quarries.

The output of Perak, the great tin-producing State, continues to decline, and in 1898 was 4,230 metric tons less than it was in 1895, when it reached its zenith of 24,249 metric tons. The British Resident‡ ascribed the diminished output to the scanty labour-supply, and not to the exhaustion of the tin resources.

Hydraulic mining has lately been introduced for the purpose of working tin deposits in the Kinta district of Perak and near Seremban in Negri Sembilan.

A certain amount of vein mining is being carried on. At the mines of the Pahang Corporation at Kuantan, Pahang, about 30,000 tons of crude tin ore are being stamped yearly, with a yield of about 960 tons of tin oxide (*black tin*), or 3½ per cent. This yield corresponds very closely with that of Dolcoath mine in Cornwall, which is 3½ per cent.

The owners of the Rin Lode in Jelebu (Negri Sembilan) are about to commence to crush.

The total number of coolies employed at the alluvial mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1898 amounted to 125,580.

TABLE 314.

PERSONS EMPLOYED at MINES during the Years 1897 and 1898.

State.				1897.	1898.
Negri Sembilan	...	...	...	—	10,836
Pahang	...	...	...	—	1,975
Perak	...	...	...	—	54,316
Selangor	...	...	...	—	58,453
Total	...	...	...	127,930	125,580

* *Blue Books for Cyprus for 1896-7 and 1897-8.*

† Official Return furnished by the Mines Department, Seremban.

‡ Treacher, *Perak Administration Report for the year 1898*, p. 8.

FEDERATED MALAY STATES—*continued.*

TABLE 315.

SUMMARY of QUANTITY and VALUE of MINERALS produced in the four States during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. 25	Metric Tons. 25	£ (Not stated)	Statute Tons. 20	Metric Tons. 20	£ (Not stated)
Copper ore						
Gold	ozs. 27,253	kilos. 847	92,697	ozs. 23,726	kilos. 738	83,175
Tin*	42,410	43,091	2,654,866	39,576	40,211	2,829,684

TABLE 316.

NEGRI SEMBILAN.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin*	2,916	2,963	182,544	2,746	2,790	196,378

TABLE 317.

PAHANG.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. 25	Metric Tons. 25	£ (Not stated)	Statute Tons. 20	Metric Tons. 20	£ (Not stated)
Copper ore						
Gold	ozs. 26,146	kilos. 813	89,549	ozs. 22,526	kilos. 701	80,078
Tin*	548	557	34,290	631	641	45,113

TABLE 318.

PERAK.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold	ozs. 1,107	kilos. 34	3,148	ozs. 1,200†	kilos. 37	3,097
Tin*	20,966	21,302	1,312,503	19,703	20,019	1,408,770

* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

† Output from January to August only.

FEDERATED MALAY STATES—*continued.*

TABLE 319.

SELANGOR.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin*	17,980	18,209	1,125,529	16,496	16,761	1,179,423

TABLE 320.

DEATHS FROM ACCIDENTS AT MINES during the Years 1897 and 1898.

State.	Number of persons killed.		Death-rate per 1,000 persons employed.	
	1897.	1898.	1897.	1898.
Negri Sembilan	2	5	†	·46
Pahang	1	11‡	·93	†
Perak	26	25	·53	·46
Selangor... ..	†	†	†	†
Total	29§	41§	·42§	·46||

Gold Coast.¶

The name of the Colony points to its mineral resources. The principal gold mines are situated in Wassaw and Appolonia in the Western District. The gold deposits now being worked are beds of conglomerate similar in character to those which are yielding such enormous quantities of precious metal in the Transvaal. When the railway from the coast is completed to the mining districts, a much greater development of the mineral wealth of the Gold Coast may be confidently expected.

The ores of silver, mercury, lead, tin, copper, and iron have been found, and quarries of sandstone abound throughout the settlement.

TABLE 321.

PERSONS EMPLOYED at GOLD MINES during the Year 1898.

Under-ground.	Above-ground.			Total.
Males.	Males.	Females.	Total.	
881	1,811	221	2,032	2,913

* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

† Not ascertainable.

‡ Including accidents to woodcutters.

§ Excluding Selangor.

|| and Pahang.

¶ Official Return furnished by the Colonial Secretary of Gold Coast Colony, *Blue Books for Gold Coast* for 1897 and 1898.—Smith, "Gold Coast Annual Report for 1897," *Colonial Reports*, Annual, No. 249, London, 1898 [C. 9406-17], p. 13. and No. 271 [C. 9498-5], 1899, p. 12.—Irvine, "The Gold Mines of West Africa," *Jour. Soc. Arts.*, Vol. XLVII., p. 305.

GOLD COAST—*continued.*

The quantity and value of gold exported in 1897 and in 1898 was as follows :—

TABLE 322.

Metal.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
Gold	Ozs. 23,555	Kilos. 732	£ 84,797	Ozs. 17,733	Kilos. 552	£ 63,838

The amount of gold obtained from the mines which furnished the returns of persons employed was 10,458 ozs., worth £41,042.

TABLE 323.

DEATHS FROM ACCIDENTS at GOLD MINES during the Year 1898.

Under-ground.	Above-ground.	Total.	Death-rate per 1,000 persons employed.		
			Under-ground.	Above-ground.	Total.
1	—	1	1·13	—	·34

India.

Much valuable information concerning mines and other mineral workings is contained in the two annual official publications "Review of Mineral Productions in India for 1897," by Mr. David Hooper, and the "Report of the Inspection of Mines in India, for the year ending 31st December 1897," by Mr. James Grundy, Inspector of Mines in India.

The three most important minerals worked are :—coal, gold ore, and salt.

Coal.—The total output of coal in 1898 was 4,136,813 tons,* or about 73,686 tons more than that of the previous year. About three-quarters of the coal produced in India comes from Bengal; the remainder is obtained from the North West Provinces and Oudh, Punjab, Central Provinces, Assam, Burma, Central India, the Nizám's Dominions, and Baluchistan.

The continued increase in the output of coal, and especially in Bengal, is eminently satisfactory. Ten years ago India was producing 1·7 million tons a year; now the output has risen to 4·6 millions. The possibility of restoring to India some of its former glory as an iron-producing country was discussed at the late meeting of the Iron and Steel Institute in Manchester. The author of one of the papers† read at the meeting comes to the conclusion that "nothing but English capital and modern appliances are required to establish a thriving iron and steel manufacture in the premier state of India (Hyderabad)"; and a second writer, Major Mahon,‡ is of opinion that the rich ore of the Madras Presidency could be profitably smelted with the aid of Bengal coal.

Cobalt.—In his report for 1896 Mr. Grundy states that cobalt mining is an industry of some importance in Jeypore.

* Official Return furnished by Mr. James Grundy, the Inspector of Mines for India.

† Shamsul Ulama Syed Ali Bilgrami, "Iron Industry in the Territory of His Highness the Nizam of Hyderabad, Deccan."

‡ "India as a Centre for Steel Manufacture."

INDIA—continued.

Gold.—The most important mineral industry in India is gold mining; small quantities of the precious metal are washed from river sands in very many parts of the country, but the total amount so obtained is insignificant with the output of the quartz veins of Mysore. The value of the gold obtained is nearly double that of the coal.

The importance of the Mysore gold mining industry becomes apparent when we consider Mr. Grundy's figures for 1898. The 22 gold mines at work employ 21,603 persons, of whom 11,736 work under-ground. The gold produced was 412,381 ounces (12,826 kilos.), of which nearly one-third came from the Mysore Gold Mine, and more than one-fourth from the Champion Reef Gold Mine, which obtained such an unenviable notoriety in 1897 on account of a disastrous accident by which 52 men lost their lives.

*Mica.**—Quarrying mica is an industry of some importance, for the number of persons employed at the Hazaribagh Quarries in Bengal was more than 5,000.

Petroleum.—The oil wells in Burma, where petroleum has been obtained for more than 2,000 years, furnish most of this mineral; and the output of the province in 1897 shows an increase of 28 per cent. compared with the previous year.

Rubies.—The chief ruby mines are in Upper Burma.

Salt.—The sources of the salt supply are: (a) lakes and pits of Rajputana; (b) evaporation of sea water in various places; (c) rock-salt mines of the Punjab, Kohat, and Mandi State, and brine wells of the Punjab.

Saltpetre.†—The nitre of India is obtained from a natural efflorescence from the soil, especially in the province of Behar. The crude earth is purified by solution, filtration, evaporation, and crystallization.

The area over which saltpetre is manufactured is estimated at 232,314 square miles; and according to the census of 1891 there were 119,558 saltpetre workers and sellers in India.

Soda Salts.—The carbonate and the sulphate of soda are manufactured in very many districts of India from the surface soil or from saline efflorescences, in like manner to saltpetre.

TABLE 324.

PERSONS EMPLOYED in and about MINES in INDIA for the Year ending 31st December 1898.‡

Kind of Mines.	Under-ground.			Above-ground.			Total Below and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
Alum	1,200	—	1,200	300	—	300	1,500§
Coal	87,046	58,756	145,802	54,661	41,649	96,310	242,112
Cobalt ore	1,500	—	1,500	125	150	275	1,775
Copper ore	1,721	—	1,721	100	—	100	1,821
Gold	12,810	—	12,810	9,326	1,522	10,848	23,658
Gypsum	—	—	—	200	52	252	252
Iron ore	1,171	730	1,901	94	35	129	2,030
Manganese ore	—	—	—	2,100	1,430	3,530	3,530
Mica	11,748	980	12,728	13,490	5,141	18,631	31,359
Plumbago	262	—	262	80	45	125	387
Rubies, sapphires, spinels, and garnets.	—	—	—	—	—	—	(Not stated.)
Salt	693	549	1,242	93	10	103	1,345
Stone, limestone, slate, &c.	121	10	131	809	179	988	1,119
Total	118,272	61,025	179,297	81,378	50,213	131,591	310,888

* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 49.

† *Ibidem*, p. 54.

‡ Official Return furnished by Mr. James Grundy, the Inspector of Mines for India.

§ Including some persons employed at copper mines.

INDIA—continued.

TABLE 325.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1897 and 1898.

Mineral.	1897.*			1898.		
	Quantity.		Value.	Quantity.		Value
	Statute Tons.	Metric Tons.	Rs.	Statute Tons.	Metric Tons.	Rs.
Alum	411	418	(Not stated)			
Amber	owts. 26½	kilos. 1,346	4,990			
Antimony	(Not stated)	—	—			
Asbestos	lbs. 560	kilos. 254	40			
Beryl	(Not stated)	—	(Not stated)			
Borax (exported) ...	276	280	94,488			
Clay	558,098	567,054	4,47,669			
Do.	445,554	452,704	(Not stated)			
Coal	4,063,127	4,128,330	1,24,66,588	4,136,813†	4,203,190	
Copper ores	32	33	275			
Corundum	121	123	3,749			
Do.	203	206	(Not stated)			
Diamonds	carats 301	grams 62	19,031			
Fuller's earth	313	318	500			
Garnet	carats 363,760	—	(Not stated)			
Gold	ozs. 389,028	kilos. 12,100	2,23,25,758	ozs. 412,381§	kilos. 12,826	
Granite	318,322	323,430	5,17,525			
Do.	304,978	309,872	(Not stated)			
Gravel and rubble ...	34,370	34,922	22,156			
Do. do.	6,153	6,252	(Not stated)			
Gypsum	8,058	8,187	4,330			
Iron ores	43,314	44,009	1,52,300			
Jade	115	117	83,436			
Laterite	373,479	379,472	3,76,296			
Do.	5,925,238	5,020,322	(Not stated)			
Lead ores	(Not stated)	—	(Not stated)			
Limestone	1,070,298	1,087,474	7,82,693			
Do.	761,613	773,835	(Not stated)			
Magnesia	(Not stated)	—	(Not stated)			
Manganese ores	73,680	74,862	58,94,40†			
Mica	446	453	1,99,003			
Do.	246	250	(Not stated)			
Ochre	(Not stated)	—	—			
Petroleum	galls. 19,128,828	litres 86,911,027	22,63,772			
Plumbago	60	61	(Not stated)			
Quartz, onyx, agate, Cornelian rock crystal, &c.	(Not stated)	—	(Not stated)			
Rubies	—	—	8,02,452			
Salt	923,118	937,932	48,76,294			
Saltpetre (exported) ...	26,423	—	57,21,638			
Sandstone	186,301	189,291	1,93,315			
Do.	755,123	767,241	(Not stated)			
Slabstone	(Not stated)	—	2,561			
Slate	17,128	17,403	40,408			
Do.	9,041	9,186	(Not stated)			
Soapstone	149	151	209			
Do.	969	984	15,660			
Do.	151	154	(Not stated)			
Soda salts	(Not stated)	—	(Not stated)			
Stone, miscellaneous ...	66,720	67,791	31,006			
Do. do.	22,212	22,568	(Not stated)			
Tin ore	61	62	39,555			
Trap	104,919	106,603	78,519			
Do.	33,621	34,161	(Not stated)			
Tourmaline	lbs. 560	kilos. 254	(Not stated)			

* Watt, *Review of the Mineral Production in India for 1897*. Calcutta 1898

† Estimated from export value.

‡ Official Return furnished by Mr. James Grundy, the Inspector of Mines for India.

§ Ibid.—Output of Mysore Gold Mines only.

INDIA—continued.

TABLE 326.

OUTPUT and VALUE of MINERALS, classified according to the PROVINCES or STATES, for the Years 1896 and 1897.*

Mineral and Province or State where wrought.	1896.			1897.		
	Quantity.		Value.	Quantity.		Value.
INDIA.						
<i>Aden†.</i>	Statute Tons.	Metric Tons.	Rupees.‡	Statute Tons.	Metric Tons.	Rupees.‡
Salt	44,811	45,022	2,62,757	43,828	44,531	2,59,798
Total value in £ sterling	—	—	£11,506	—	—	£15,696
<i>Ajmere-Merwara.</i>						
Clay	8,266	8,399	790	2,790	2,835	235
Granite... ..	11,745	11,933	2,300	6,246	6,346	1,260
Limestone	1,968	2,000	272	757	769	108
Sandstone	2,202	2,237	1,205	8,282	8,415	4,225
Stone, miscellaneous	55	56	375	60	61	486
Total value in Rupees ...	—	—	4,942	—	—	6,314
" " in £ sterling	—	—	£273	—	—	£382
<i>Assam.</i>						
Coal	177,259	180,104	12,35,052	185,533	188,510	12,89,897
Limestone	76,346	77,571	83,239	43,756	44,458	86,847
Petroleum	galls. 238,730	litres 1,084,060	23,873	galls. 222,077	litres 1,008,998	22,208
Total value in Rupees ...	—	—	13,42,164	—	—	13,98,952
" " in £ sterling	—	—	£74,099	—	—	£84,519
<i>Bengal.</i>						
Beryl	(Not stated)	—	(Not stated)	(Not stated)	—	(Not stated)
Borax (exported)	329	334	1,17,359	265	269	89,934
Clay	69,037	70,145	(Not stated)	44,969	45,601	(Not stated)
Coal	3,037,920	3,086,671	81,46,411	3,142,497	3,192,926	79,15,781
Granite	29,948	30,429	13,183	64,636	65,073	10,598
Gravel and rubble	18,135	18,426	9,397	33,429	33,965	21,215
Iron ore	6,120	6,218	11,965	36,280	36,862	65,696
Laterite	43,040	43,731	(Not stated)	115,021	166,867	(Not stated)
Lead ore	—	—	—	—	—	—
Limestone	48,434	49,211	19,888§	75,941	77,160	31,117
Mica	309	314	3,42,333	443	450	1,98,792
Salt	8,507	8,644	59,636	7,255	7,371	50,540
Sandstone	25,495	25,904	(Not stated)	28,932	29,396	(Not stated)
Slate	1,068	1,085	"	750	762	"
Soapstone	59	60	"	34	35	"
Trap	5,885	5,979	"	26,060	26,478	"
	—	—	—	—	—	—
<i>Berar.</i>						
Clay	670	681	335	420	427	210
Granite	99,761	101,362	2,227	—	—	—
Laterite	540	549	270	620	630	310
Limestone	928	943	832	5,632	5,722	6,482
Stone, miscellaneous... ..	—	—	—	—	—	—
Trap	91,509	92,977	21,537	104,694	106,374	78,126
Total value in Rupees ...	—	—	25,201	—	—	85,128
" " in £ sterling	—	—	£1,391	—	—	£5,143
<i>Cooch.</i>						
Clay	1,925	1,956	(Not stated)	1,800	1,829	(Not stated)
Granite	15,648	15,899	46,944	9,175	9,322	27,525
Laterite	149	151	149	83	84	83
	—	—	—	—	—	—

* Watt, *Review of Mineral Production in India for 1896 and 1897*, Calcutta.

† Aden is under the administration of the Government of Bombay.

‡ The value of the rupee has been calculated at 1s. 1½d. for 1896 and 1s. 2½d. for 1897.

§ Value for 18,018 tons only.

INDIA—*continued.*

TABLE 329.

DEATHS from ACCIDENTS at the MYSORE GOLD MINES.*

Year.	Persons Employed.	Deaths.			Death-rate per 1,000 Persons Employed.		
		Below- ground.	Above- ground.	Total.	Below- ground.	Above- ground.	Total.
1896	16,740	39	4	43	4.24	.53	2.57
1897	19,868	93	4	97	—	—	4.88
1898	21,603	48	5	53	4.09	.51	2.45
Average death-rate	—	—	—	—	—	—	3.37

In the introduction to the General Report and Statistics for 1897 (page 276), I pointed out that a confusion of tongues is a possible cause of accidents. It stands to reason that want of familiarity with the language used by the officials or fellow-workmen may engender misunderstandings, with occasionally very serious effects. Publication of rules in all tongues commonly used is therefore desirable. The babel which exists among the workers at the Mysore† gold mines is evident from the fact that the mining rules have had to be translated into no less than six languages, viz., Tamil, Telugu, Malayalam, Canarese, Hindustáni and Italian.

Labuan. (*See* BRITISH BORNEO.)

Leeward Islands. (*See* REDONDA AND SOMBRERO.)

Malta.

A soft oolitic limestone is quarried for building purposes.

Beds of phosphatic nodules and phosphatized rock‡ exist in the Island, but do not appear to have been worked at present.

Natal (*including* ZULULAND).§

According to the Report of the Commissioner, the mining industry of Natal continues to make substantial progress. The output of coal increased very considerably, and rose to 387,811 tons in 1898.

Numerous recent discoveries show that the Colony is rich in copper ore, though in the case of gold the results have been disappointing; the Commissioner is, nevertheless, confident that there is a prosperous future in store.

* Official Return furnished by Mr. James Grundy, the Inspector of Mines for India.

† Mysore Geological Department. *Report of the Chief Inspector of Mines for the year 1898.* p. 8.

‡ *Eng. Min. Jour.*, Vol. LIV., 1892, p. 200.

§ *Reports on the Mining Industry of Natal for 1898.* Pietermaritzburg, 1899.

NATAL—continued.

Other minerals which are likely to be profitably worked in the future are asbestos, graphite, limestone, marble, mica, nickel ore, and slate.

TABLE 330.

PERSONS EMPLOYED at COAL PRODUCING MINES during the Years 1897 and 1898.

Year.	Above and Below Ground.			
	Europeans.	Natives.	Indians.	Total.
1897	73	1,015	472	1,560
1898	116	1,753	854	2,723

TABLE 331.

QUANTITY and VALUE of COAL and GOLD produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	243,960	247,875	121,980	387,811	394,034	75,015
Gold	ozs. 97	kilos. 3	340	ozs. 17	kilo. 1	60

TABLE 332.

DEATHS from ACCIDENTS at COAL PRODUCING MINES during the Years 1897 and 1898.

Year.	Below-ground.			Above-ground.			Total Below-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1897	7	—	7	—	—	—	7	4.48
1898	9	—	9	—	—	—	9	3.30

The number of deaths which occurred at non-producing collieries during the year 1898 was 9, but as the number of persons employed at these collieries is not accurately known, the death-rate cannot be calculated.

The "Natal Mines Act, 1899," based upon the recommendations of a Government Committee, consolidates and amends the mining laws of Natal and Zululand. It will come into force very shortly.

Under the powers conferred upon the Governor, regulations have been drawn up for the control and safe working of mines. The code is very long and complete. The new Natal regulations are largely drawn from the excellent code of the South African Republic, parts of which might be copied with advantage in this country.

Newfoundland.

Newfoundland is well-known as a copper-producing country, and Mr. Collins,* from whose pamphlet the following particulars are taken, reckons that it has produced 50,000 tons of fine copper, worth at least three millions sterling, since the ore was first discovered in 1857. He states that the coal resources of the Island are likely to bear valuable fruit in the near future. Gold has been discovered. The hæmatite of Great Bell Island is being shipped on an extensive scale to Nova Scotia. It is expected that the Dominion Iron and Steel Company will soon employ 4,000 men at Bell Island † and extract a million tons of ore yearly. Iron pyrites has been largely worked; rich veins of argentiferous lead ore have furnished supplies for exports at various times. Among other minerals, deposits of antimony ore, arsenical pyrites, asbestos, chrome iron ore, gypsum, petroleum and zinc blende are known to exist and await exploitation.

TABLE 333.

QUANTITY and VALUE of the MINERALS produced during the Years 1897 and 1898.‡

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Arsenical Pyrites	125	127	(Not stated)	—	—	—
Chromite	2,300	2,337	6,853	646	656	2,959
Coal	—	—	—	2,900	2,946	2,383
Copper ore and regulus ...	68,323	69,419	141,860	66,798	69,870	134,947
Granite... ..	120	122	207	4,000	4,064	4,109
Iron ore	58,940	59,886	12,111	102,000	103,637	20,959
Manganese	1,500	1,524	3,699	—	—	—
Iron pyrites	32,790	33,316	33,688	32,335	32,854	33,220
Slate (squares)	300	—	277	300	305	277
Stone :—						
Building	—	—	—	100	102	82
Paving	—	—	—	1,700	1,727	2,794
Total Value	—	—	198,695	—	—	201,730

New Guinea (see BRITISH NEW GUINEA).

New South Wales.

Coal and the ores of gold, lead, and silver are the principal minerals worked in this Colony.

Coal.—The existence of coal has now been known for a hundred years, and the quantity raised during the century is reckoned to be more than 76 million tons, of which more than 75 million have been obtained since 1857. The output for 1898, which exceeded 4½ million tons, is the greatest hitherto recorded.

The coal-bearing areas of the Colony are well shown upon a sketch map in Mr. A. A. Atkinson's report;§ the largest collieries are in the district north of Newcastle, and some produce more than 200,000 tons a year each.||

* *Newfoundland, its Mineral and Other Resources.* J. H. Collins.

† *Times*, 23rd August 1899.

‡ Return furnished by J. P. Howley, Director of Geological Survey of Newfoundland.

§ *Annual Report of the Department of Mines and Agriculture for 1897*: Sydney, 1898, p. 84.

|| *Ibid.*, p. 57.

NEW SOUTH WALES—*continued.*

It is satisfactory to note that Mr. Atkinson, in writing his report, follows the arrangement of the British Inspectors of Mines ; this enables the comparison with the mother country to be made very readily, and it would be very convenient if other colonies adopted the same plan.

*Copper.**—The rise in the price of the metal has caused more attention to be directed to the copper resources of the Colony. The principal mine at the present time is at Cobar.

Diamonds.—The fact that diamonds are found in several parts of the Colony is of much scientific interest, and working the gems may some day become an industry of commercial importance.

Gold.—The most important gold yielding districts in 1897 were Bathurst, Lachlan, and Peel and Uralla.

Following the lead of New Zealand, dredging for gold has been commenced in New South Wales.

Silver and lead.—The silver and lead mining of the Colony is practically concentrated at Broken Hill, in the Albert Mining District.

TABLE 334.

PERSONS EMPLOYED at all MINES during the Years 1897 and 1898.†

Kind of Mines.	1897.			1898.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Coal	7,831	1,795	9,626	8,192	2,066	10,258
Gold { alluvial ...	—	—	9,030‡	—	—	8,303§
	quartz ...	—	12,256	—	—	11,616
Shale	246	107	353	197	64	261
Silver	—	—	6,204	—	—	6,396
Other mines ...	—	—	3,739	—	—	3,996
Total	—	—	41,208	—	—	40,830

* Carne, "The Copper Mining Industry of New South Wales," *Mineral Resources*, No. 6. Department of Mines and Agriculture, Sydney, 1899.

† *Annual Report of the Department of Mines and Agriculture for 1897*, pp. 57, 58, and 80 ; and for 1898, pp. 65 and 90.

‡ Including 1,002 Chinese.

§ Including 864 Chinese.

NEW SOUTH WALES—continued.

TABLE 335.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.*

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite	724	736	2,172	2,941	2,988	8,823
Antimony and Antimony ore ...	169	172	3,612	82	83	916
Bismuth	3	3	800	29	29	4,615
Chrome	3,380	3,434	10,269	2,111	2,145	6,301
Coal	4,383,591	4,453,937	1,230,041	4,706,251	4,781,775	1,271,832
Cobalt	—	—	—	117	119	560
Coke	64,202	65,232	45,392	82,222	83,541	64,135
Copper (ingots)	6,756	6,864	299,829	5,654	5,745	280,048
„ (ore and regulus)	166	169	851	178	181	839
Diamonds	carats 9,189	grams 1,887	3,250	carats 16,493	grams 3,387	6,060
Fireclay	—	—	—	14	14	32
Gold	ozs. 302,817	kilos. 9,419	1,128,164	ozs. 340,493	kilos. 10,590	1,244,330
Iron, oxide of	230	234	536	392	398	832
Lead (pig)	32	33	398	1,718	1,746	19,282
Limestone (flux)	67,590	68,675	41,798	9,253	9,401	5,783
Manganese	—	—	—	1	1	5
Oil shale	34,090	34,637	40,612	29,689	30,165	31,834
Opal	—	—	95,000	—	—	80,000
Platinum	ozs. 1,966	kilos. 56	2,949	ozs. 1,250	kilos. 39	2,062
Silver (ingots and matte) ...	ozs. 150,005	kilos. 4,665	16,711	ozs. 533,059	kilos. 16,580	59,278
Silver lead and ore (a)	289,018	293,656	1,681,528	398,569	404,965	1,644,777
Tin (ingots)	1,141	1,159	70,128	894	908	60,565
„ (ore)	14	14	560	1	1	35
Zinc ore	28,842	29,305	23,688	38,941	39,566	28,941
Sundry minerals (including building stone).	—	—	8,125	—	—	2,863
Total value	—	—	4,706,413	—	—	4,824,748

(a) As the bulk of the silver is exported in the form of silver-lead, the quantity of fine silver contained therein can only be an approximation. It is stated in the Report of the Department of Mines (p. 82) that 12,792,504 ozs. or 397,892 kilos. of silver were won at some of the principal mines in the Colony during the year 1898.

TABLE 336.

DEATHS from ACCIDENTS at all MINES during the Years 1897 and 1898.†

Kind of Mines.	1897.		1898.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal and shale ...	16	1·60	25	2·38
Gold { alluvial ...	8	0·88	—	—
{ quartz ...	7	0·57	10	·86
Silver and lead ...	14	2·26	19	2·97
Other mines... ..	6	1·60	6	1·50
Total	51	1·24	60	1·47

* Annual Report of the Department of Mines and Agriculture for 1897, pp. 25 and 72, and for 1898, pp. 24 and 82.

† Ibid., p. 58, and for 1898, pp. 22 and 65.

NEW SOUTH WALES—*continued.*

TABLE 337.

DEATHS FROM ACCIDENTS AT COAL AND SHALE MINES during the Years 1897 and 1898.*

Year.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
1897	15	1	16	1·86	0·53	1·60
1898	23	2	25	2·74	0·94	2·38

The worst accident of the year was an explosion of firedamp which caused the loss of 15 lives; firedamp, which had accumulated through inadequate ventilation, was ignited by a naked light, and the explosion was intensified by the presence of coal-dust.

The following table shews a considerable improvement since 1895 in the cases of lead poisoning at the Broken Hill mines:—

TABLE 338.

BROKEN HILL MINES.†

Year.	Number of Persons Employed.	Cases of Lead Poisoning Reported.	Percentage of Persons Affected.
1895	4,297	89	2·07
1896	5,400	44	·81
1897	6,473	17	·26
1898	6,842	14	·20

New Zealand.

The three important minerals worked in New Zealand are coal, gold, and kauri gum.

Coal.—The largest coal mines are on the west coast of the Middle Island; Coalbrookdale Colliery produced 192,851 tons, Kaitangata 100,750, and Millerton 87,269 last year. The total output of the Colony was 907,033 tons, against 840,713 in 1897.

Gold.—Gold is obtained in various parts of the Islands, and the precious metal is extracted from ordinary alluvial diggings, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this method of extraction seems to be coming more and more into favour.

According to the Minister of Mines † “Material can now be dredged, washed, and the “stones and tailings elevated and conveyed clear of the pontoons at a cost of from “1*d.* to 3*d.* per cubic yard.” The growing importance of the dredging industry is made manifest by his figures, which show that one-seventh of the value of the precious metal exported from the Colony came from gold obtained in this fashion.

Kauri Gum.—Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives, and the price paid for the semi-fossil resin, £60 per ton, is so great that the value exceeds the total value of the coal produced.

* *Annual Report of the Department of Mines and Agriculture for 1897*, pp. 107 and 108, and for 1898, pp. 113 and 115.

† *Ibid.*, p. 94.

‡ Hon. A. J. Cadman, *New Zealand, Mines Statement*, Wellington, 1899, p. 9.

NEW ZEALAND—continued.

TABLE 339.

PERSONS EMPLOYED at COAL MINES during the years 1897 and 1898.*

	Year.	Below-ground.	Above-ground.	Total.
	1897	1,381	531	1,912
	1898	1,447	556	2,003

TABLE 340.

PERSONS EMPLOYED at GOLD MINES during the Years ended 31st March 1898 and 1899.†

Mining District.	Alluvial Miners.		Quartz Miners.		Total.		Grand Total.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1899.	1898.
Auckland ...	—	—	3,599	—	3,599	—	3,599	3,962
Marlborough ...	117	—	10	—	127	—	127	127
Nelson ...	1,573	564	619	—	2,192	564	2,756	2,762
Westland ...	1,909	441	27	—	1,936	441	2,377	2,517
Otago ...	3,383	964	466	—	3,849	964	4,813	4,830
Total ...	6,982	1,969	4,721	—	11,703	1,969	13,672	14,198

TABLE 341.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.‡

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony ore ...	10	10	157	—	—	—
Coal ...	840,713	854,204	451,915	907,033	921,589	475,731
Coke (exported) ...	—	—	—	9	9	14
Copper ore ...	—	—	2	2½	2½	70
Gold ...	ozs. 251,645	kilos. 7,827	980,204	ozs. 280,175	kilos. 8,714	1,080,691
Kauri gum ...	6,641	6,748	398,010	9,905	10,064	586,767
Manganese ore ...	180	182	541	217	220	703
Silver ...	ozs. 183,892	kilos. 5,720	20,872	ozs. 293,851	kilos. 9,140	33,107
Sulphur ...	—	—	—	1,765	1,793	4,097
Sundry mixed minerals ...	1,561	1,586	5,892	63	64	695
Total value ...	—	—	1,857,593	—	—	2,181,875

Compared with the year 1897 there has been a marked improvement in the output of silver, and a decided increase in the production of coal and of kauri gum.

* *Inspection of Coal Mines Reports.* C.—3b, Wellington, 1898 and 1899.† Hon. A. J. Cadman, *New Zealand, Mines Statement*, Wellington, 1899. C.—2, p. 21.‡ *Ibid.*, Wellington, 1899. C.—2, p. 2.

NEW ZEALAND—*continued.*

TABLE 342.

DEATHS from ACCIDENTS at MINES and DREDGING WORKS during the
Years 1897 and 1898.*

Kind of Workings.	1897.		1898.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Coal mines	4	2.09	1	0.50
Gold mines	14	1.00	9	1.91
„ alluvial, hydraulic, sluicing and dredg- ing.	5	11.90	12	1.34
Total	23	1.43	22	1.40

Mining in New Zealand is now governed by two Acts of Parliament: (1) The Coal Mines Act, 1891, and (2) The Mining Act, 1898. The former applies to *Coal Mines*, and in addition to laying down regulations for the safe and proper working of mines, deals with mining leases; the latter applies to other mines, including the getting of precious stones if the Governor so decrees by Order in Council. The new Act of 1898 contains full particulars of the privileges accorded to persons for prospecting and for taking up of claims to work minerals. Part V. contains the regulations for the safe working of mines. Mine managers must be certificated, and even the person in charge of gold extraction works by the cyanide process, and the driver of a winding engine must likewise be certificated. The code of General Rules is far more complete than that of the British “Metalliferous” Mines Regulation Act, 1872.”

Nigeria.

About the mineral wealth of Nigeria little can be said definitely at the present time. The region is known to contain deposits of antimony, silver, and tin.

North Borneo. (*See BRITISH BORNEO.*)

Nova Scotia. (*See CANADA.*)

Ontario. (*See under CANADA.*)

* *Papers and Reports relating to Minerals and Mining*, Wellington, 1898, C.—2, pp. 7 and 8, 1899, C.—2, p. 13.

Queensland.*

The mineral products of Queensland are very numerous, but gold is the only one of importance at the present day ; for, in spite of the large area of coal-bearing rocks, the total yearly output of coal is only about 400,000 tons.

Gold.—Queensland is blessed with many goldfields, the positions of which are indicated on a map appended to the “Annual Report of the Under-Secretary for Mines” for 1898. The most important is Charters Towers, which produced last year nearly half a million ounces of gold. The Mount Morgan field comes next with nearly 172,000 ounces, of which 165,000 stand to the credit of the famous mine which gives the field its name.

TABLE 343.

PERSONS EMPLOYED at MINES during the Years 1897 and 1898.

Kind of Mines.					1897.	1898.
Coal	...	...	...	...	1,179	1,278
Gold	{	alluvial	...	...	5,585†	3,889‡
		vein	...	...	7,250	7,383
Other mines	...	...	...	...	873	863
Total					14,887	13,413

TABLE 344.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Bismuth ore	1	1	134	8	8	700
Coal	358,407	364,150	139,889	407,934	414,480	150,493
Copper ore	288	293	12,645	62	63	2,166
Gold	ozs. 807,928	kilos. 25,129	2,553,141	ozs. 920,048	kilos. 28,617	2,750,349
Lead	385	391	4,117	248	252	2,480
Manganese ore	397	403	1,506	67	68	251
Opal	—	—	10,250	—	—	6,645
Salt (exported)§	—	—	—	5	5	21
Silver	ozs. 234,065	kilos. 7,280	25,118	ozs. 104,021	kilos. 3,235	10,585
Stones:—						
Bluestone	65,724	66,729	8,233	64,850	65,891	5,962
Granite	6,000	6,098	1,050	6,985	7,097	1,397
Limestone	500	508	50	1,600	1,626	800
Porphyry	19,830	20,148	3,545	59,688	60,646	7,502
Sandstone	6,982	7,094	2,546	7,022	7,135	2,954
Slate	28,625	29,084	4,183	—	—	—
Tin ore (dressed)	1,203	1,222	37,509	1,025	1,041	36,502
Wolfram ore	13	13	195	78	79	2,540
Total value	—	—	2,804,111	—	—	2,981,347

* Annual Report of the Under Secretary for Mines for 1898. Brisbane, 1899.

† Including 897 Chinese.

‡ " 890 "

§ Statistics of Queensland for 1898, Brisbane, 1899.

QUEENSLAND—continued.

TABLE 345.

DEATHS from ACCIDENTS at MINES during the Years 1897 and 1898.

Kind of Mines.	1897.		1898.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	2	1·70	—	—
Other mines ...	16	1·17	19	1·57

A Statute entitled "The Mining Act of 1898" was passed last year with the object of amending and consolidating the laws relating to goldfields, mineral lands, mines, and mining in the Colony. It is certainly an immense advantage to have one general enactment in place of the sixteen separate Statutes which are now repealed.

The first eleven parts of the Act relate mainly to the acquisition of mining rights, and to the administration of the law. Part XII. deals with what may be called co-operative drainage; a "Drainage Board" may be established to take in hand the drainage of a specified area, with power to construct and maintain drainage works, and to assess the owners of the mines in proportion to the benefit they derive from these works.

Part XIII. contains the regulations for the safe working of mines. The Government is enabled to appoint a Board of Examiners having the power to grant certificates of competency to persons desirous of becoming mining managers; but a person is not debarred from acting as a manager if he has no certificate.

The General Rules are forty in number, and contain sundry useful provisions which are not to be found in the British Statute.

In the case of "collieries," that is to say, mines worked for "coal, kerosene-shale, stratified ironstone or fireclay," there are further provisions.

The power of the Legislature is greatly increased by Part XIV., which enables the Governor from time to time to make other regulations, and so deal with various mining matters. Certain of these regulations are contained in the supplement to the *Queensland Government Gazette*, 28th April, 1899 (Vol. LXXI., No. 110). They relate mainly to claims, water-right, mining leases, and drainage areas.

A useful leaflet furnishing an epitome of the principal provisions of the Act has been prepared by Mr. Rutledge.*

Redonda (Leeward Islands).

The number of persons employed in obtaining phosphate of alumina in 1898 was about 140.

TABLE 346.

QUANTITY and VALUE of MINERAL produced during the Years 1894† and 1895.‡

Mineral.	1894.			1895.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Phosphate of alumina ...	570	579§	1,105	5,687	5,778	4,976

* Dean and Son, Ltd., London, 1899.

† *Annual Statement of the Trade of the United Kingdom for 1894.*

‡ *Official Return furnished by the Government of the Leeward Islands.*

§ Exported.

Rhodesia.

Coal.—The coal resources are being tested in some places by sinking and driving, and the results are promising.

Gold.—Gold mining seems to be making satisfactory progress in the Colony. The output for the last four months of 1898 was 18,085 ozs. ; it goes on increasing gradually, and the latest returns of the Rhodesian Chamber of Mines show a total of 60,015 ozs. for the first eleven months of the current year.

Mining in Rhodesia is regulated by the “Mines and Minerals (Existing Rights) Ordinance, 1895,” and certain short amending Ordinances of 1897 and 1898. These laws deal mainly with the acquisition and tenure of mining rights, and do not contain a code of regulations for working mines like the General Rules of the British Acts.

Sarawak. (See BRITISH BORNEO.)

Sombrero. (LEEWARD ISLANDS.)

The phosphate of lime quarry at Sombrero is no longer worked.

South Australia.*

There are no records in the Mines Department affording information as to the number of persons employed at mines in South Australia proper, or as to the number of deaths from accidents. It is estimated, however, that during the current year about 4,000 persons are engaged in mining in that division of the Colony, and principally for copper and gold. Of the 1,533 persons engaged in mining in the Northern Territory, 93 per cent. were Chinese.

Copper.—Copper ore is by far the most important mineral of this Colony. It is obtained chiefly from mines in Yorke's Peninsula in South Australia proper. The rise in the price of the metal will no doubt stimulate the production of the South Australian mines.

Gold.—Compared with that of the other Australian Colonies, the output of gold is at present insignificant. Most of it comes from the Northern Territory.

TABLE 347.

PERSONS EMPLOYED at MINES during the Year 1898.

—				Average Number of Persons Employed in and about the Mines.
South Australia proper	...	...	...	4,000†
Northern Territory...	...	...	...	1,533
Total	...	...	...	5,533

* Official Return furnished by Department of Mines, Adelaide.—Government Resident's Report on the Northern Territory for the Year 1898.—Statistical Register for 1898.

† Approximate.

SOUTH AUSTRALIA—*continued.*

TABLE 348.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper (exported)	4,705	4,781	238,277	4,771	4,848	244,865
Copper ore „	546	555	4,640	536	545	3,992
Gold	ozs. 33,899	kilos. 1,054	120,044	ozs. 31,961	kilos. 994	95,143
Gold ore (exported)... ..	—	—	186	—	—	322
Lead „	82	83	1,146	316	321	3,806
Mica „	—	—	4,730	—	—	100
Salt „	28,805	29,267	34,706	30,950	31,447	38,492
Silver Lead „	—	—	1,522	183 (a)	186	950
Tin ore „	—	—	10	47	48	220
Zinc (Spelter) „	6	6	118	18	18	218
Unenumerated ore (exported)	—	—	7	—	—	197
Total value	—	—	405,386	—	—	388,305

(a) Estimated to contain 10,980 ozs. of fine silver.

According to the Government Resident's Report there were two fatal accidents at gold mines in the Northern Territory during the year 1898.

Straits Settlements.

Apparently there is little, if any, mining in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore ; but the adjacent Federated Malay States are great producers of tin ore (*see* p. 301).

Tasmania.*

Nature, which has done so much for Tasmania in endowing it with mineral treasures, has nevertheless put great difficulties in the way of their discovery, for the prospector has to make his way through a very rugged and densely-wooded country, which in places becomes almost impenetrable from the tangled undergrowth. It is no wonder therefore that Tasmania has lagged behind the Australian Colonies and New Zealand as a mineral producer. Now that its resources are gradually becoming known and that its railroads are being extended, mining is proceeding apace and with satisfactory results.

Tasmania is producing a little coal, but its importance at the present moment as a mineral country is due to its great deposits of the ores of copper, lead, gold, and tin.

The Official Handbook of Tasmania† contains a useful map showing the principal mineral districts.

Coal.—The output is at present insignificant.

Copper.—Mount Lyell Mine in the West Coast district is the great producer of copper, and the ore is further made valuable by containing gold and silver. The Colony, which only began to export in 1896, sent away 4,955 tons of metal last year.

* *Report of the Secretary for Mines*, 1898-9, Hobart, 1899.—“Tasmania and its Mineral Wealth.” Special edition of the *Australian Mining Standard*, 1st July 1898.—Harcourt-Smith, *The Progress of the Mineral Industry of Tasmania* for the Quarter ending 31st December 1898, Hobart, 1899.

† Launceston, 1899.

TASMANIA—continued.

Gold.—In addition to the gold obtained from the copper ore of Mount Lyell and its neighbours, there are numerous veins of gold-bearing quartz. The Tasmania Mine, Beaconsfield, is the largest producer.

Lead.—The Zeehan district boasts of many rich deposits of silver-bearing lead ore, and Tasmania is already producing about one half as much lead and more than fourteen times as much silver as the United Kingdom.

Tin.—As in the case of its competitor Cornwall, it was tin ore which first drew special attention to the mineral wealth of the country. For many years tin was the principal mineral export of Tasmania; though still an important product, its value is now considerably exceeded by that of the gold and argentiferous lead. Mount Bischoff continues to be one of the largest tin mines in the world.

Thanks to natural advantages and skilled management, the Anchor Tin Mine in the Eastern district is being worked at a good profit with ore yielding only one-half a per cent. of clean tin oxide (*black tin*); the total cost of mining, crushing, dressing, &c., is less than 2s. 6d. per ton treated.

TABLE 349.

PERSONS EMPLOYED at the MINES during the Years ended 30th June 1897-98 and 1898-99.

	1897-98.	1898-99.
	5,530	6,180

TABLE 350.

QUANTITY and VALUE of the MINERALS produced during the Years ended 30th June 1897-98 and 1898-99.

Description of Mineral.	1897-98.			1898-99.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Coal	48,501	49,279	38,801	44,141	44,849	37,915
Copper (blister) }	4,956(a)	5,035	397,927	6,079	6,177	467,268
" ore }				1,889	1,919	31,985
Gold	ozs. 79,981½	kilos. 2,487	313,402	ozs. 84,189	kilos. 2,619	331,414
Iron ore	—	—	—	1,633	1,659	1,576
Silver Lead Ore	15,120	15,363	177,160	24,203†	24,591	217,735
Tin	3,229	3,281	199,868	2,006	2,038	189,847
Total value	—	—	1,127,158	—	—	1,277,740

(a) Exported.

TABLE 351.

DEATHS from ACCIDENTS at MINES during the Years ended 30th June 1897-98 and 1898-99.

1897-98.		1898-99.	
Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
13	2.35	18	2.91

Estimated to contain 718,328 ozs. or 22,328 kilos. of fine silver.

" 9,870,962 ozs. or 73,977 kilos. of fine silver, on the assumption that 98½ ozs. are contained in one ton.

Trinidad.*

Although coal, glance pitch, gypsum, and galena are to be found, the Colony possesses no mines, properly so called.

The only mineral workings of any consequence are the diggings for asphalt at the well-known Pitch Lake at La Brea. The insular revenue derived from this source in 1898 was £34,066.

TABLE 352.

QUANTITY and VALUE of ASPHALT exported in the Years 1897 and 1898.

	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asphalt, purified	14,129	14,356	28,258	13,622	13,841	27,243
„ raw	110,543	112,317	110,543	86,574	87,963	86,574
Total value	—	—	138,801	—	—	113,817

Turks and Caicos Islands.†

Salt is the most important article produced in these islands. It is obtained by the solar evaporation of sea water in shallow ponds on the coast.

TABLE 353.

Mineral.	1896.			1897.		
	Quantity Exported.		Value.	Quantity Exported.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Salt	59,500	60,455	29,107	69,852	70,973	33,630

Victoria.‡

The total number of persons employed in an industry makes a fair index of its importance. In Victoria we find 31,734 engaged in mining; this figure is much the same as that of the miners in Colorado, one of the great ore-mining States of America. In Victoria, 97 per cent. of the men are employed in or about gold mines, and the remaining 3 per cent. in mining for antimony ore, coal, infusorial earth, lead ore, and tin ore.

Statisticians very properly advocate that the output of gold in different countries should be stated in ounces of fine gold and not in ounces of bar gold. The necessity of a uniform standard is very patent in the case of the Australian colonies, where we find that the bars vary in value from an average of £3 an ounce in Queensland to £4 an ounce in Victoria. Judged by its output of 837,257 ounces, Victoria occupied the third place as a gold producer in 1898, whereas if the value £3,195,197 is considered, it comes second, for the 920,048 ounces of bar gold produced by Queensland were worth only £3,000,042.

* *Blue Books, Trinidad and Tobago*, 1897 and 1898.

† Governor Sir A. W. L. Hemming, "Turks and Caicos Islands Annual Report for 1897.—*Colonial Reports*—Annual. No. 230, London, 1898 [C. 8650-28].

‡ *Annual Reports of the Secretary for Mines for Victoria* for 1897 and 1898.

VICTORIA—continued.

There are now seven gold mines more than 3,000 feet deep.* The remarkable economy with which mining is sometimes carried on becomes evident from the fact that Stewart's United Company, at Bendigo, was able to pay a dividend with quartz yielding only 2 dwts. of gold to the ton.†

TABLE 354.

PERSONS EMPLOYED at MINES during the Years 1897 and 1898.

		1897.	1898.
Coal		908	893
Gold		32,820	30,804
Other Mines		76	37
Total		33,804	31,734

TABLE 355.

QUANTITY and VALUE of the MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony ore	5	5	20	110	112	510
Building stone	—	—	25,000	—	—	20,000
Brown coal	3,918	3,981	1,177	2,869	2,915	767
Clays	—	—	4,080	—	—	4,500
Coal	236,277	240,069	108,640	242,860	246,757	103,099
Gold	ozs. 812,766	kilos. 25,280	3,251,061	ozs. 837,257	kilos. 26,041	3,349,028
Infusorial earth	—	—	—	140	142	280
Lignite	800	813	200	—	—	—
Silver lead ore	—	—	—	20(a)	20	240
Tin ore	47	48	1,650	87	88	3,913
Total value	—	—	3,391,781	—	—	3,482,337

(a) Estimated to contain 2,000 ozs. of fine silver.

TABLE 356.

DEATHS from ACCIDENTS at MINES during the Years 1897 and 1898.

Kind of Mines.	1897.		1898.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	3	3.30	—	—
Gold	37	1.13	44	1.43
Total	40	1.18	44	1.39

The death-rate from accidents has averaged 1.44 per 1,000 during the last 20 years. On the whole it has remained remarkably steady, for it has never reached 2. and, with the exception of one year, it has never gone below 1 per 1,000. It is to be regretted that the table given in the Report affords no means of calculating the death-rate of the underground hands separately. As in all other countries, falls of rock and earth in the mines account for more accidents than any other cause, and taking the average of the last 25 years, 42.7 per cent. of the deaths have arisen in this manner.

The Report of the Secretary for Mines for 1898 (p. 32) contains the regulations for the Examinations for Mining Surveyors, as uncertificated persons are not allowed to keep up the statutory mine plans.

* *Ibid.* for 1898, p. 15.† *Ibid.*, pp. 5, 11, and 12

Western Australia.*

Coal.—Several large coal-bearing districts have been discovered, the most important at present is the Collie coalfield, which appears to be of the same geological age as the Newcastle coalfield in New South Wales.

Copper.—Ores of this metal have been discovered and worked to a small extent.

Gold.—Western Australia is now our premier gold-producing Colony. The output for 1898† exceeded a million ounces, and will probably approach one and a half million ounces this year. Most of the precious metal is derived from veins, and 762,084 tons of ore treated, gave the very high average of 1 oz. 5 dwts. 5 grains per ton.

The goldfields are by no means confined to one part of the Colony; however, East Coolgardie throws all the others into the shade, as it produced in 1898 nearly one-half of the total output.

Salt.—124 tons of salt were produced at Rottnest Prison‡ by the solar evaporation of salt water.

Tin.—Like its neighbours, Western Australia is tin-bearing; but the attractions of gold mining will probably be great enough to absorb the attention of capitalists for the present.

TABLE 357.

PERSONS EMPLOYED at GOLD MINES during the Years 1897 and 1898.

Year.	Number of Persons Employed.		
	Under-ground.	Above-ground.	Total.
1897	—	—	17,903
1898	7,127	5,939	13,066

TABLE 358.

QUANTITY and VALUE of the MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper ore (exported) ...	86	87	1,033	355	361	4,266
Gold (exported)	ozs. 674,994	kilos. 20,994	2,564,977	ozs. 1,050,184	kilos. 32,664	3,990,698
Lead ore (exported)	—	—	—	5	5	33
Mica (exported)	—	—	209	—	—	—
Salt§	159	162	399	124	126	280
Tin ore (exported)	95½	97	3,275	68	69	2,760
Total value	—	—	2,569,893	—	—	3,998,037

* Reports of the Department of Mines of Western Australia for the Years 1897 and 1898.

† The amount exported appears to furnish the best estimate of the actual output.

‡ Report on Rottnest Prison for the year 1898, Perth, 1899.

§ Produce of Rottnest Island only.

WESTERN AUSTRALIA—*continued.*

TABLE 359.

DEATHS from ACCIDENTS at GOLD MINES during the Years 1897 and 1898.

1897.		1898.	
Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
27	1.51	31	2.37

West Indies. (*See* BARBADOS, REDONDA, TRINIDAD.)

FOREIGN COUNTRIES.

Abyssinia.*

Gold is obtained from the Wallega and Beni Shangul districts.

There is an inexhaustible supply of rock salt on the shores of Lake Assal near the coast; this salt is cut up into pieces of the size of an ordinary whetstone for a scythe, and used as money.

Algeria.

The two principal minerals raised in Algeria are iron ore and phosphate of lime. A considerable quantity of limestone is quarried, and the workings for salt and zinc ore are of some importance.

Iron Ore.—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by mines belonging to the Mokta-el-Hadid Company in the Departments of Constantine and Oran.

Phosphate of Lime.†—The phosphate industry, which is comparatively new, for it dates back only to 1893, has already assumed large dimensions. The amount exported in 1897 was 220,000 tons against 5,000 in 1893. The output for 1898 amounted to 269,000 tons. The phosphate is quarried in the vicinity of Tébessa in the Province of Constantine, and it bids fair to become the most important mineral product of Algeria.

Salt.—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

Zinc Ore.—The marked increase in the output of zinc ore in 1897 was not maintained during the year 1898.

TABLE 360.

PERSONS EMPLOYED during the Years 1897 and 1898.‡

Year.	At Mines.	At Underground Quarries.	At Open Quarries.
1897	1,884	650	2,795
1898	1,786	800	2,649

* Rodd, "Report on the Trade of Adis Abbaba, Abyssinia." *Dipl. and Cons. Reports*, No. 1978, Ann. Ser., 1897 [C.-8648].

† Consul-General Hay-Newton, "Trade of Algeria for the year 1898." *Dipl. and Cons. Reports*, No. 2302, Ann. Ser., 1899. [C. 9044-128].

‡ *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1897*, p. 77, *Ibid.* 1898, p. 79.

ALGERIA—continued.

TABLE 361.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1897 and 1898.*

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore	781	108,104	138	22,080
Brown coal	—	—	200	2,400
Iron ore	441,467	3,316,412	473,569	3,518,337
Lead ore, argentiferous	145	16,205	120	15,600
Rock salt and salt from brine ...	23,222	390,288	21,302	429,815
Zinc ore	32,269	1,507,687	29,774	1,406,707
Total Value in Francs ...	—	5,338,696	—	5,394,939
„ „ £ sterling ...	—	213,548	—	215,797

TABLE 362.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1897 and 1898.†

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Granite	67,180	298,035	78,690	310,375
Marble	16,265	171,125	6,372	67,520
Travertine	350	875	150	375
Limestone	29,640	773,800	25,975	623,915
Crude limestone	1,660	130,750	985	150,020
Crude limestone (rough and broken) ...	130	1,300	—	—
Crude limestone (rough and broken) ...	364	127,400	219	62,415
Crude limestone (rough and broken) ...	29,120	547,365	29,750	552,925
Crude limestone (rough and broken) ...	228,141	4,562,820	269,400	5,390,000
Crude limestone (rough and broken) ...	80,860	101,400	72,185	78,585
Crude limestone (rough and broken) ...	511,225	1,586,030	739,021	1,744,155
Crude limestone (rough and broken) ...	688,325	891,645	685,490	946,475
Total Value in Francs ...	—	9,192,545	—	9,926,360
„ „ £ sterling ...	—	367,702	—	397,054

Industrie Minière en France et en Algérie pour l'année 1897, p. 37, Ibid. 1898, p. 37.
Ibid. p. 67, Ibid. 1898, p. 70.

ALGERIA—continued.

TABLE 363.

DEATHS from ACCIDENTS during the Years 1897 and 1898.*

Kind of Working.	1897.		1898.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines... ..	2	1.05	1	.56
Underground Quarries	4	6.15	1	1.25
Open Quarries	4	1.43	—	—
Total	10	1.87	2	.77

Annam. (See INDO-CHINA.)

Arabia.

The Arab is not a miner by nature, and there is little or no working for minerals on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

Argentine Republic.

All writers seem to agree that the mineral resources of the Argentine Republic are great;† little, however, has been done to develop them. In addition to the ores of copper, gold, iron, lead, mercury, nickel, and silver, the Republic can produce asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur. As railways are extended to the Andes, bringing facilities for working, the mining industry is sure to progress rapidly.

Unfortunately the National Department of Mines and Geology at Buenos Aires is unable to supply any statistics. The figures in the table below have, therefore, no official sanction.

TABLE 364.

QUANTITY and VALUE of COPPER, GOLD, and SILVER produced during the Years 1896‡ and 1897.§

Metal.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
Copper	Metric Tons. 390	£ 18,330||	Metric Tons. —	£ —
Gold	Kilos. 473	64,682	Kilos. 207	28,255
Silver	Kilos. 10,210	87,125¶	Kilos. 11,930	101,807¶

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1897*, p. 77, *Ibid.*, 1898, p. 79.

† "Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Proc., Inst., C.E.*, Vol. CXXVIII, 1896-7, Part II.

‡ *The Mining Journal*, Vol. LXVII., 1897, p. 254.

§ *Report of the Director of the United States Mint for 1898*.

|| Value of foreign copper in London market.

¶ Coining value of fine silver.

Aruba. (See DUTCH WEST INDIES.)

Austria-Hungary.

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by Austria, though not forming part of the empire.

It is to be regretted that complete statistics for 1898 are not yet issued.

Among the famous mines of the Austro-Hungarian empire may be mentioned the workings for gold and silver in Hungary and Transylvania, iron in Styria, lead and silver at Przibram in Bohemia, quicksilver in Carniola; salt is obtained in the Austrian Alps and in Galicia, which is likewise remarkable for its petroleum and ozokerite. The bulk of the brown coal comes from Bohemia, which after Silesia is the largest producer of ordinary coal.

TABLE 365.

AUSTRIA.

PERSONS EMPLOYED at MINES, arranged according to PROVINCE in which Employed, during the Years 1897* and 1898.

Province.	Persons Employed.			
	1897.		1898.	
	Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower	564	0.45		
„ Upper	1,674	1.35		
Bohemia	57,778	46.45		
Bukowina	99	0.08		
Carinthia	3,851	3.10		
Carniola	2,394	1.92		
Dalmatia	252	0.20		
Galicia	4,632	3.72		
Görz and Gradisca	38	0.03		
Istria	762	0.61		
Moravia	10,713	8.61		
Salzburg	554	0.45		
Silesia... ..	25,097	20.18		
Styria	14,889	11.97		
Tirol	1,096	0.88		
Vorarlberg	1	0.00		
Total	124,394	100.00	128,685	100.00

* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1897*, Vienna, Part II., No. 2, p. 123.

AUSTRIA—continued.

TABLE 368.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1897 and 1898.*

Province.	Kind of Workings.	1897.				1898.			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
Galicja ...	Ozokerite ...	6,034	323	—	6,407				
" ..	Petroleum ...	5,525	5	7	5,537				

TABLE 369.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1897† and 1898.‡

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Florins.	Metric Tons.	Florins.
Alum shale and vitriol ore ...	21,585	17,945	28,914	21,367
Antimony ore	864	73,449	679	57,167
Asphalt	300	8,868	643	15,604
Bismuth ore	1	1,200	—	—
Brown coal	20,458,092	40,084,423	21,083,361	43,192,791
Coal	10,492,771	38,404,864	10,947,522	41,142,493
Copper ore	7,405	279,393	6,791	253,248
Gold ore	647	32,938	448§	54,876
Graphite	38,504	1,352,646	33,062	873,566
Iron ore	1,613,876	3,766,048	1,733,649	4,227,688
Lead ore	14,145	1,161,899	14,362	1,230,391
Manganese ore	6,012	47,961	6,132	47,795
Quicksilver ore	88,238	814,059	88,519	801,076
Silver ore	20,628	1,871,801	20,886||	1,762,595
Sulphur ore	529	4,837	496	4,153
Tin ore	16	2,422	13	1,896
Tungsten ore	31	19,248	36	33,159
Uranium ore	44	45,011	51	51,719
Zinc ore	27,463	530,141	27,395	799,290
Total value in florins ...	—	88,519,153	—	94,870,874
" " £ sterling ...	—	£7,376,596	—	£7,905,906

* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums* for 1897, Vienna, Part II., No. 2, pp. 240 and 241.

† Do. do. do. 1897, do. No. 1, pp. 164, 166-169.

‡ Do. do. do. 1898, do. No. 1, pp. 171, 174-177.

§ 71 kilos. of fine gold were obtained at the Metallurgical Works in 1898.

|| 40,305 kilos. of fine silver were obtained at the Metallurgical Works in 1898.

AUSTRIA—continued.

TABLE 370.

QUANTITY and VALUE of SALT produced during the Years 1897 and 1898.*

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Florins.
Upper Austria ...	224	78,243	—	11,767	8,206,434
Salzburg ...	—	24,333	—	2,997	2,196,905
Bukowina ...	2,395	3,140	—	—	486,167
Styria ...	824	16,617	—	2,074	1,797,899
Tyrol ...	18	13,235	—	951	1,104,289
Dalmatia ...	—	—	11,578	—	540,370
Istria ...	—	—	36,329	—	3,414,945
Galicia ...	41,591	49,963	—	45,778	8,772,488
Total for 1898 ...	45,052	185,531	47,907	63,567	26,519,497
					£2,209,958
„ 1897 ...	45,271	173,068	45,362	67,381	25,561,441
					£2,130,120

TABLE 371.

QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1897† and 1898.

Province.	Mineral.	1897.		1898.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Florins.	Metric Tons.	Florins.
Galicia ...	Ozokerite ...	6,881	1,875,316		
„ ...	Petroleum ...	275,204	5,876,692		
	Total value in florins	—	7,752,008		
	„ £ sterling	—	£646,001		

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1898, Vienna, Part II., No. 1, p. 191.

† Do. do. do. 1897, do. No. 2, pp. 240 and 241.

AUSTRIA—continued.

TABLE 372.

ACCIDENTS at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1896 and 1897.*

Kind of Mines.	1897.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
Coal (bituminous)	55	303	·95	190,777
Brown coal	94	421	1·95	217,639
Iron ore	6	34	1·14	268,979
Other mines (excluding salt and ozokerite, and petroleum wells).	10	56	·78	22,641
Total for 1897	165	814	1·28	198,734
„ previous year	189	750	1·58	161,325

TABLE 373.

ACCIDENTS at SALT MINES during the Years 1896 and 1897.*

Year.	Number of Deaths from Accidents.	Number of Persons injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
1896	—	6	—	—
1897	3	6	1·30	15,090

TABLE 374.

ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS during the Years 1896 and 1897.†

Kind of Workings.	1896.			1897.		
	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.
Ozokerite	11	21	1·93	9	30	1·41
Petroleum	4	16	·88	—	26	—

The accidents have been classified according to mineral worked, place, and cause.

* *Statistisches Jahrbuch der k. k. Ackerbau-Ministeriums* for 1897, Vienna, Part II., No. 2. pp. 150, 159, and 167.

† Do. do. do. do. pp. 253-256.

AUSTRIA—continued.

TABLE 375.

DEATHS classified according to the MINERAL worked, and the PLACE of the ACCIDENT, during the Years 1896 and 1897.*

Place of Accident.	Coal.	Brown Coal.	Iron Ore.	Rock Salt.	Other Minerals.	Total.
In perpendicular shafts ...	8	15	1	—	2	26
On inclined planes ...	4	11	—	—	—	15
In levels ...	14	14	—	—	2	30
At the working face ...	22	47	2	—	5	76
Above ground ...	7	7	3	3	1	21
Total for 1897 ...	55	94	6	3	10	168
„ previous year ...	67	99	8	—	15	189

TABLE 376.

DEATHS from ACCIDENTS, arranged according to MINERAL worked and PLACE where they happened, during the Years 1896 and 1897.†

Kind of Mines.	Percentage of Deaths.					
	Perpendicular. Shafts.	Inclined Planes.	Underground Roadways.	At the Working Face.	Above-ground.	Total.
Coal ...	4.76	2.38	8.33	13.09	4.17	32.73
Brown coal ...	8.93	6.55	8.33	27.98	4.17	55.96
Iron ...	.60	—	—	1.19	1.78	3.57
Rock salt ...	—	—	—	—	1.78	1.78
Other mines ...	1.19	—	1.19	2.98	.60	5.96
Total for 1897 ...	15.48	8.93	17.85	45.24	12.50	100.00
„ previous year ...	13.23	4.77	25.93	38.09	17.98	100.00

TABLE 377.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORKINGS for OZOKERITE and PETROLEUM) during the Years 1896 and 1897.‡

Cause of Accident.	Number of Persons killed.		Increase or Decrease.
	1896.	1897.	
By falls of roof ...	30	29	— 1
„ haulage or winding appliances ...	23	29	+ 6
„ stones or things falling down ...	47	46	— 1
„ machines or tools ...	8	4	— 4
„ falling down ...	23	19	— 4
„ firedamp ...	—	5	+ 5
„ suffocation ...	25	8	— 17
During descent or ascent ...	8	—	— 8
By travelling in cage or climbing ladders ...	6	4	— 2
„ blasting ...	7	3	— 4
While undercutting (holing) ...	1	—	— 1
„ timbering ...	6	6	=
By irruption of water ...	—	2	+ 2
„ other causes ...	5	13	+ 8
Total ...	189	168	— 21

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1897, Vienna, Part II., No. 2, pp. 155-159.

† Do. do. do. do. p. 151.

‡ Do. do. do. do. p. 152.

AUSTRIA—continued.

The preceding tables show that in the mines of Austria proper (exclusive of workings for ozokerite and petroleum) there were 168 deaths from accidents, or 21 less than in 1896.*

The accidents at the ozokerite and petroleum workings separately were as follows:—

TABLE 378.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS, classified according to the PLACE where the ACCIDENT happened, during the Year 1897.†

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts	2	10
In levels	2	4
At the working face	5	7
On surface	—	35
Total for 1897	9	56
„ previous year	15	37

The number of firedamp explosions is diminishing, for only 13 took place in 1897 in all the mines (ozokerite and petroleum workings included) of Austria proper; by these 13 explosions, 5 persons were killed, 8 seriously injured, and 9 slightly injured. As shown by the table below, 11 of the 13 explosions were due to naked lights.

TABLE 379.

Separate EXPLOSIONS of FIREDAMP, arranged according to kind of MINES or other MINERAL WORKINGS, and cause of ACCIDENT during the Year 1897.‡

Cause.	Coal Mines.	Brown Coal Mines.	Ozokerite Mines and Petroleum Wells.	Total.
Naked lights	6	5	—	11
Gauze of safety lamp being dirtied with petroleum.	—	—	1	1
Firing a shot which laid bare a blower of gas.	1	—	—	1
Total for 1897	7	5	1	13
„ previous year ...	5	6	6	17

* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums* for 1897, Vienna, Part II., No. 2, p. 149.

† do. do. do. do. do. pp. 253 256.

‡ do. do. do. do. do. pp. 264 and 265.

BOHEMIA.

As Bohemia employs such a large proportion of the miners in Austria, details concerning this province have been extracted from the official reports.

TABLE 380.

PERSONS EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1896 and 1897.*

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
Coal	17,059	1,082	1,807	2	19,950	34.52
Brown coal	28,185	955	726	—	29,866	51.70
Iron	1,620	10	49	—	1,679	2.91
Other mines... ..	6,027	129	127	—	6,283	10.87
Total for 1897 ...	52,891	2,176	2,709	2	57,778	100.00
„ 1896 ...	51,447	2,164	2,356	4	55,971	100.00

TABLE 381.

DEATHS at MINES during the Years 1896 and 1897.†

Kind of Mines.	Number of Deaths from Accidents.	Average Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral produced per Death by Accident.
Coal	21	1.05	192,061
Brown coal	67	2.24	252,553
Iron ore	2	1.19	297,005
Other mines... ..	8	1.27	9,118
Total for 1897... ..	98	1.70	220,625
„ previous year	97	1.73	204,937

TABLE 382.

HUNGARY.

PERSONS EMPLOYED at all MINES (including SALT MINES) and SMELTING WORKS during the Years 1897‡ and 1898.§

Year.	Men.	Women.	Children.	Total.
1897	56,790	2,374	5,126	64,290
1898	61,688	1,649	6,544	69,881

* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums* for 1897, Vienna, Part II., No. 2, p. 96.

† Do. do. do. pp. 137 and 138. Also included with Austria in table on page 334.

‡ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Ungarisches Statistisches Jahrbuch*, Neue Folge V., 1897, Budapest, p. 124.

§ Official Return furnished by the Central Statistical Office, Budapest.

HUNGARY—continued.

TABLE 383.

QUANTITY and VALUE of MINERALS and METALS produced in 1897* and 1898.†

Mineral, Metal, or Product.	1897.		1898.	
	Quantity.	Value, Unit = 1,000 Fls.	Quantity.	Value, Unit = 1,000 Fls.
	Metric Tons.		Metric Tons.	
Alum shale	60	0·6	—	—
Antimony ore	1,800	85·3	2,201	49·8
Antimony, crude, and regulus ...	523	156·4	856	270·1
Argentiferous copper ore	—	—	—	—
Argentiferous and mercurial copper ore.	—	—	—	—
Asphalt	3,057	160·1	3,125	163·6
Auriferous and argentiferous lead and copper ore.	97,702	1,163·2	113,266	953·8
Auriferous silver ore	1,685	185·0	2,083	234·7
Bismuth ore	141	27·9	94	22·8
Briquettes	27,022	216·2	31,781	253·3
Brown coal	3,870,530	12,541·0	4,516,581	14,022·7
Coal	1,118,025	6,034·5	1,239,499	6,569·2
Copper ore	365	4·4	428	6·2
Copper vitriol	6	1·5	—	—
Gold ore (washed)	6,419	418·5	6,129§	376·2
Iron ore	1,421,129	3,778·3	1,666,836	4,527·4
Iron pyrites	44,454	176·4	58,079	230·3
Iron vitriol	592	2·9	745	4·4
Lead ore... ..	3,928	330·2	4,721	303·9
Manganese ore	3,976	10·0	8,055	8·3
Nickel and cobalt ore	32	3·1	—	—
Nickel and cobalt speiss	8	2·4	—	—
Petroleum	2,299	56·5	2,471	60·9
Quicksilver ore... ..	7	0·1	55	2·5
Salt	171,711	13,267·0	178,551	13,989·0
Silver ore	2,604	157·0	1,691||	88·5
Sulphur	112	8·2	93	7·1
Total value in Florins	—	38,786·7	—	42,144·7
„ „ £ sterling	—	£3,232,225	—	£3,510,367

TABLE 384.

DEATHS at all MINES (including SALT MINES and SMELTING WORKS) during the Years 1897* and 1898.†

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.
1897	81	203	1·26
1898	88	221	1·26
Comparison between 1897 and 1898	+7	+18	=

* Official Return furnished by the Central Statistical Office, Budapest, and published in *Ungarisches Statistisches Jahrbuch*, Neue Folge V., 1897, Budapest, pp. 128, 129, 130, and 134.

† Official Return furnished by the Central Statistical Office, Budapest.

§ 2,768 kilos of fine gold were obtained at the Metallurgical Works in 1898.

|| 18,792 Do. silver do do do do.

BOSNIA AND HERZEGOVINA.*

The principal collieries in Bosnia are at Zenica and Kreka; they are worked by the State. The coal is of Tertiary age. Zenica colliery produces about 100,000 tons a year, and Kreka colliery 160,000 tons.†

TABLE 385.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1897 and 1898.

Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.
1897	807	142	346	199
1898	777	154	378	163

TABLE 386.

QUANTITY and VALUE of MINERAL produced during the Years 1897 and 1898.

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Florins.	Metric Tons.	Florins.
Brown coal	229,643	489,369	271,183	566,324
Chrome ore	396	13,870	458	16,370
Copper ore	3,527	24,860	4,323	37,496
Iron ore	37,095	79,086	58,532	128,357
Iron pyrites	3,670	18,351	240	1,200 (a)
Manganese ore	5,344	84,429	5,319	93,154
Salt (Brine) ... (hectolitres)	1,138,420‡	45,536	1,177,788§	47,112
Zinc ore	—	—	10	260
Total value in Florins	—	755,501	—	890,273
„ £ sterling	—	£62,958	—	£74,189

(a) Estimated on value for 1897.

TABLE 387.

DEATHS at MINES during the Years 1897 and 1898.

Year.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1897	—	—	—	—	—	—	—	—
1898	3	—	3	—	—	—	3	2.29

* Statistics prepared by the "Bosnisches Bureau, Montan-Abtheilung," published in the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen*, XLVII. Jahrgang, 1899, pp. 298 and 299.

† Poech, *Oesterreichische Zeitschrift für Berg- und Hüttenwesen*, Vol. XLVII 1899, p. 369.

‡ Containing 12,089 tons of salt.

§ „ 12,507 „ „

Banca and Billiton. (See DUTCH EAST INDIES.)

Bavaria. (See GERMAN EMPIRE.)

Belgium.

The workings for mineral in Belgium are classified in the official statistics under three heads: (1) Coal Mines; (2) Ore Mines; (3) Quarries. The following table shows that coal mining is by far the most important of the mineral industries of the country.

TABLE 388.

PERSONS EMPLOYED.*

Kind of Workings.	1897.			1898.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal Mines	88,341	32,041	120,382	90,289	32,557	122,846
Ore Mines... ..	855	1,079	1,934	797	882	1,679
Quarries (Open and Under-ground)	2,255	30,346	32,601	—	—	35,625
Total	91,451	63,466	154,917	—	—	160,150

From the next table we learn that women and girls are still employed below-ground in the Belgian collieries, though their number is decreasing rapidly. Thirty years ago about 12 per cent. of the underground workers were females; in 1891 the percentage had dropped to 4, and last year it was reduced to four-tenths only.

TABLE 389.

PERSONS EMPLOYED at COAL MINES during the Years 1897 and 1898.†

Year.	Under-ground.							Above-ground.							Total Under-ground and Above-ground.	
	Males.			Females.				Males.			Females.					
	Ages.			Ages.				Ages.			Ages.					Total.
	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.	Total.	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.			
1897...	1,804	4,223	81,678	—	87	549	88,341	1,147	1,384	21,536	2,646	3,774	1,554	32,041	120,382	
1898...	1,821	4,326	83,718	—	19	405	90,289	1,224	1,434	21,786	2,686	3,951	1,476	32,557	122,846	

Information of a very useful character is contained in table 390 prepared annually by the Belgian Mining Department. The average output per underground worker was only 245 tons in the year 1898, compared with 371 in this country; the reason of this is the small size of the seams, which on an average are only 2 feet 2 inches (66 c.m.) thick.

* *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1897* and corresponding volume for 1898, Brussels, pp. 8 and 24.

† *Ibid.*, 1898, p. 8.

BELGIUM—continued.

TABLE 390.

COAL MINES.

THICKNESS OF COAL SEAMS, NUMBER OF PERSONS EMPLOYED, and OUTPUT per PERSON in each District during the Year 1898, and Totals for the previous Year.*

District.	Number of Persons Employed				Ratios.		Number of Square Metres of Seam laid bare.				Annual Output. (Metric Tons.)				Daily Output. (Metric Tons.)							
	Underground.		Above-ground.	General Total.	Of Persons Employed at the Underground.	Of Persons Employed Underground to Total Number Employed.	Days worked.	In the Year.	Per Year.	Per Day.	Per District.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Underground and Above-ground.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Above and Under-ground.	
	At the Face.	Others.	Total.																			Of all Classes.
	Mean useful thickness of Coal Seam.																					
Metre.																						
Mons
Centre
Charleroi
Namur
Liège
Totals and Averages for 1898																						
"	1897	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

* Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à vapeur, pour l'année 1898, Brussels, 1899, pp. 10 and 11.

BELGIUM—*continue.*

TABLE 391.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES* for the Years 1897 and 1898.†

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
		Francs.		Francs.
Barytes <i>Metric Tons</i>	23,000	161,000	21,700	151,900
Clay "	270,715	1,799,760	287,805	2,081,200
Coal "	21,492,446	220,672,100	22,088,335	242,893,900
Felspar <i>Cubic Metres</i>	1,100	9,700	1,000	9,900
Flint for earthenware "	23,050	88,600	22,150	88,500
Iron ore <i>Metric Tons</i>	240,774	1,264,510	217,370	1,058,220
Lead ore... .. "	108	16,150	133	21,504
Manganese ore "	28,372	342,700	16,440	211,500
Marl and chalk... .. <i>Cubic Metres</i>	204,600	453,400	297,050	681,100
Ochre and other colours .. "	350	7,250	290	5,900
Phosphate of lime "	121,180	1,039,530	156,920	1,516,150
Phosphatic chalk "	229,380	1,144,280	224,400	1,789,400
Pyrites <i>Metric Tons</i>	1,828	19,950	147	886
Sand <i>Cubic Metres</i>	559,141	1,185,980	638,424	961,325
Slate { <i>Number</i>	41,422,000	1,654,300	42,311,000	1,735,000
	1,445	24,600	210	18,300
Stone :—				
Building stone dressed .. "	181,746	15,384,620	215,417	15,887,670
Conglomerate "	220	27,500	180	23,400
Dolomite "	52,720	69,540	37,100	65,340
Flags <i>Square Metres</i>	107,572	358,230	170,672	788,250
Gravel and broken stone. { <i>Cubic Metres</i>	235,495	554,095	360,960	789,500
Hone stones and scythe stones. { <i>Number</i>	43,150	83,700	89,150	112,950
Limestone <i>Cubic Metres</i>	225,300	445,425	212,685	373,700
Marble "	17,797	2,359,770	16,610	2,735,500
Paving stone... .. <i>Number</i>	95,542,700	8,699,375	108,025,000	10,081,570
Rough stone, broken stone, and lime. <i>Cubic Metres</i>	3,010,877	13,653,651	2,968,997	12,903,475
Zinc ore... .. <i>Metric Tons</i>	10,954	578,050	11,475	747,560
Total value in Francs	—	272,097,766	—	297,733,600
" " £ sterling	—	£10,883,910	—	£11,909,344

* Excluding the two Flanders and the Province of Antwerp, which only furnish Tertiary clays for making bricks and tiles, and sand used in making glass and for other purposes.

† *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1898, Brussels, 1899 pp. 17, 24, 25, and 27.*

BELGIUM—*continued.*

TABLE 392.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1897 and 1898.*

Year.	Kind of Workings.	Under-ground.	Above-ground.	Total.	Number of Deaths per 1,000 Persons Employed.		
					Under-ground.	Above-ground.	Total.
1898	Coal mines	154	18	172	1.71	.55	1.40
"	Ore mines	—	—	—	—	—	—
"	Underground quarries...	9	—	9	—	—	†
1897	Coal mines	116	8	124	1.31	.25	1.03
"	Ore mines	2	—	2	2.34	—	1.03
"	Underground quarries...	3	—	3	—	—	†

Bohemia. (*See AUSTRIA-HUNGARY.*)

Bolivia.‡

Bolivia is remarkable as being the great silver-producing country of South America; it likewise yields antimony, bismuth, copper, gold, and tin.

Bismuth.—The bismuth is obtained from the Chorolque mines in the department of Potosi.

Copper Ore.—The copper ore of the Corocoro district is rich enough to pay heavy transport expenses to Mollendo, whence it is shipped to Europe.

Gold.—Gold is extracted by washing from alluvia on a small scale.

Silver.—The richness of the silver mines of the Potosi district has become proverbial; a few years ago more than one-half of the silver was produced by the Huanchaca mines.

Tin Ore.—The tin is found in veins along the eastern border of the plateau from Lake Titicaca to near the south boundary of the Republic.

Op. cit., pour l'année 1897, pp. 44 and 47, et pour l'année 1898, pp. 46 and 51.

† The death-rate cannot be calculated as the number of persons employed in underground quarries is not given separately.

‡ Consul St. John. "Trade, &c. of Bolivia for the year 1895." *Dipl. and Cons. Reports*, No. 1841; Ann. Ser., 1897 [C. 8277-59].

BOLIVIA—continued.

TABLE 393.

QUANTITY and VALUE of MINERALS produced and exported through the Port of Antofagasta during the Years 1897 and 1898.*

Description of Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore	673	498,050	591	591,266
Bismuth... ..	47	491,235	—	—
Copper, ingots	12	6,213	149	59,255
" matte	330	69,561	623	137,038
" ore	5	1,742	145	29,047
Gold	—	—	Kilos. 39	48,107
Lead, ingots	47	9,819	210	46,105
" silver	48	5,071	2,054	410,772
" ore	64	6,745	27	3,103
Silver	Kilos. 88	5,573	—	—
" ingots	Kilos. 79,660	5,044,998	Kilos. 53,128	4,357,282
" matte	4	3,188	—	—
" ore	19,119	20,181,260	17,253	17,252,792
" sulphide... ..	23	61,022	87	2,620,410
Silver and copper ore	61	12,912	6	1,343
" " lead ore	229	48,325	—	—
Tin, ingots	6,338	7,112,692	6,639	3,169,914
" ore	114	72,284	429	270,102
Wolfram	—	—	94	46,926
Other ores	—	—	15	7,031
Total value in Dollars	—	33,630,690	—	29,050,493
" " £ sterling	—	£2,522,302	—	£2,178,787

Bonaire. (See DUTCH WEST INDIES.)

Borneo. (See BRITISH NORTH BORNEO and DUTCH EAST INDIES.)

Bosnia. (See AUSTRIA-HUNGARY.)

Brazil.

The fact that Brazil produces gold and precious stones leads to the idea that it is an important mining country. No doubt its mineral resources are great ; but judged by the actual output they are not properly utilized. Capitalists and prospectors are discouraged by unsatisfactory mining legislation, which appears to be the main reason why the mining industry is at so low an ebb.† No official statistics are published by the Brazilian Government.

In addition to diamonds and gold, Brazil is yielding coal, iron ore, manganese ore, and monazite sand. Petroleum and the ores of copper and lead exist in workable quantities.

* Official Return furnished by the Sociedad de Fomento Fabril, Santiago, and *Estadística Comercial de la República de Chile correspondiente al Año de 1897 and 1898*, Valparaiso.

† Acting Consul-General Rhind, "Trade of Rio de Janeiro for 1898." *Dipl. and Cons. Reports*, No. 2,234, Ann. Ser., 1899 [C 9044-110], p. 27.

Diamonds.*—Compared with the output of Kimberley, the total production of diamonds in Brazil, estimated at 40,000 carats, is at present insignificant. A powerful company has lately erected machinery for washing the diamondiferous gravel on a large scale, and a very great increase in the total output of the country is confidently expected. The most important diamond districts in Brazil are Diamantina, Grao Mogul, Chapada Diamantina, Bagagem, Goyaz, and Matto Grosso.

Manganese† mining is an industry of comparatively recent date in Brazil. The principal deposits are in the district of Miguel Burnier in the State of Minas Geraes; the ore is brought by rail a distance of 310 miles to the coast, and thence shipped to England and the United States. At the present time the method of working is by open quarries. There are two mines near Nazareth in the State of Bahia.

Monazite Sand‡ is obtained near the town of Prado in the north of the State of Bahia.

Phosphate of Lime.§—It is proposed to work the phosphate of lime which exists on the Island of Rata near the Island of Fernando da Noronha.

TABLE 394.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
C oal || ... ..	15,173 (a)	(b)	—	—
D iamonds *†	Kilos. 3,831 (c)	7,121	Carats 40,000 (d)	(b)
G old	Kilos. 1,812 **	247,228	Kilos. 3,359 ¶	458,299
M anganese ore ¶	16,054	(b)	26,417	(b)
M onazite ‡	226	4,439	—	—
S alt †	24,394	(b)	—	—

(a) Produce of Rio Grande do Sul only.

(b) Not stated.

(c) Exports of Bahia only.

(d) Estimated production of Brazil.

Bulgaria.††

TABLE 395.

NUMBER of PERSONS EMPLOYED at MINES during the Year 1894.

Under-ground.			Above-ground.			Total Above and Under Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
215	—	215	95	—	95	310

* Beaumont, "A Journey to the Diamond Fields of Minas Geraes." *Dipl. and Cons. Reports*, No. 2,058, Misc. Ser., 1899 [C. 9045-22], pp. 10 and 12, and United States Consular Report, No. 424, May 1899.

† Consul-General Wagstaff, "Trade of Rio de Janeiro for the year 1897." *Dipl. and Cons. Reports*, No. 2,058, Ann. Ser., 1898 [C. 8648-80], p. 10. *Op. cit.*, Beaumont, p. 21. *Op. cit.*, Consul Nicolini, p. 6.

‡ Consul Nicolini, "Trade of Bahia for the years 1896-7-8." *Dipl. and Cons. Reports*, No. 2,282, Ann. Ser., 1899 [C. 9044-108], pp. 7 and 16.

§ Consul Howard, "Trade of Pernambuco and District for the year 1898." *Dipl. and Cons. Reports*, No. 2,288, Ann. Ser., 1899 [C. 9044-114], pp. 9 and 10.

¶ Consul Bernal, "Trade of Rio Grande do Sul for the year 1897." *Dipl. and Cons. Report*, No. 2,080, Ann. Ser., 1898, [C. 8648-102], p. 10.

¶ Acting Consul-General Rhind, "Trade of Rio de Janeiro for the year 1898." *Dipl. and Cons. Reports*, No. 2,284, Ann. Ser., 1899 [C. 9044-110], p. 27.

** *Report of the Director of the United States Mint for 1898.*

†† Official Return furnished by the Mining Department of the Bulgarian Ministry of Commerce and Agriculture. Latest figures are not available.

TABLE 396.

QUANTITY and VALUE of MINERAL produced during the Year 1894.

Mineral.	Quantity raised.	Value.
Lignite	Metric Tons. 57,340	£ 16,528

* The most important coal basins at present discovered are those of Mochino and Pernik, respectively 28 and 30 km. distant from Sophia. The coal is of Tertiary age. The colliery at Pernik is worked by the State, and is connected with the capital by a railway 32·8 km. in length.

Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinder, dug from the sides of volcanic cones, is utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England.

Limestone for local use is derived from Fuerteventura, and to a small extent from Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

Celebes (See DUTCH EAST INDIES).

Chili.

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Other important exports are: borate of lime, coal, copper, guano, gold and gold ore, iodine, manganese ore, and silver.

Coal.—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota. Still further South there is coal of Miocene age extending to the Straits of Magellan.†

Nitrate of Soda.‡—In the year 1897 there were 67 saltpetre works in operation, which produced 1,186,730 metric tons of nitrate of soda and 179 metric tons of iodine§. They afforded employment to 16,727 persons, of whom 12,275 were Chilians. The principal port at which the nitrate is shipped is Iquique.

* *Berg- und hüt. Zeit.*, Vol. lv. 1896, p. 298.

† Gascoyne, "Coal fields of Chili." *Trans. Inst. Min. Eng.*, Vol. xv., 1898, p. 237.

‡ Much information concerning the nitrate industry in Chili is contained in the report of the Fiscal Delegate to the Minister of Finance, in the *Memoria del Ministro de Hacienda presentada al Congreso Nacional en 1898*, p. 571. Santiago de Chile, 1898.

§ *Op cit.*, p. 585.

CHILI—continued.

TABLE 397.

QUANTITY and VALUE of MINERALS exported during the Years 1897 and 1898.*

Description of Mineral.	1897.		1898.	
	Quantity.	Value. (a)	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Bismuth... ..	—	—	322	4,508
Borate of Calcium	3,154	598,755	7,028	1,124,509
Borax	14	6,035	6	3,391
Clay	20	2,106	—	—
Coal	243,968	3,944,244	282,663	4,239,943
Cobalt ore	6	658	18	1,817
Copper, ingots	19,011	11,027,280	20,600	13,759,493
„ matte	2,519	531,541	3,079	861,999
„ ore	3,396	358,299	20,301	2,022,730
Copper and Gold, ingots	—	—	Kilos. 160	2,000
„ „ „ ore	—	—	24	2,433
Copper and Silver ore	118	53,710	87	17,392
Copper, Gold, and Silver ore... ..	—	—	6	1,300
Copper, Gold, and Silver matte	—	—	73	29,133
Copper and Silver matte	164	69,427	419	167,556
Fireclay	8	173	30	1,218
Gold	Kilos. 1,132	1,909,904	Kilos. 1,630	2,445,735
Gold ore... ..	63	60,209	8	2,554
Gold and Silver ores	260	98,391	269	57,635
Iodine	243	5,125,971	235	3,169,570
Iron ore... ..	5	540	—	—
Lead, ingots	324	131,054	—	—
„ silver	46	9,674	13	13,596
Lime	1	51	1	21
Manganese ore	23,528	2,978,577	20,851	447,028
Nickel ore	1	127	3	3,000
Nitrate of Soda... ..	1,057,639	79,043,889	1,294,227	90,675,297
Phosphate of Lime	16	1,013	488	29,266
Silver, ingots	Kilos. 143,983	8,004,587	Kilos. 139,812	6,990,035
„ ore	984	916,227	284	205,386
„ matte	739	728,870	43	21,499
„ sulphide... ..	183	713,311	290	434,740
Silver and Lead ores	6	1,342	12	1,557
Tin	48	54,613	8	4,900
Other Minerals... ..	—	42,833	—	1,400
Total Value in Dollars	—	116,413,411	—	126,742,641
„ „ „ £ sterling	—	£8,731,056	—	£9,505,698

(a) Converted into Dollars valued at 1s. 6d. instead of 3s. 2d. as in the General Report and Statistics for 1897.

China.†

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of copper, gold, iron, lead, quick-silver, silver, tin, and zinc. Petroleum and sulphur are found in addition to the metallic ores in the south-west; whilst salt is specially abundant in Sze-chuan, in the extreme west, a province said to be highly favoured with other forms of mineral wealth.

* Official Return furnished by the Sociedad de Fomento Fabril, Santiago, and published in *Estadística Comercial de la República de Chile correspondiente al año de 1898*, Valparaíso, 1899, p. 407.

† The "salt wells of China." *Jour. Soc. Arts*, Vol. XLVI, 1898, p. 355.

Fearon and Allen.—"The Chinese, and recent industrial progress in China." *Eng. Mag.*, Vol. XVI, 1898, p. 166.

M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.

Jameson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI, 1898, p. 365.

Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV, 1898, p. 491.

CHINA—continued.

The province of Shan-tung* possesses deposits of coal, copper, diamonds, gold, iron, lead, and silver. The first named mineral is the most important, and is already worked on a small scale and in a very primitive fashion in various parts of the province. No shaft is more than 30 yards (28 m.) deep, and the usual depth is only about 20 yards. It is expected that the harbour of Kiao-chou will be connected by rail with the Wei-hsien coalfield, the first of importance, in two years.†

An extensive bed of hæmatite in the neighbourhood of the I-chou-fu coalfield, which can be worked opencast, may be of importance to Kiao-chou in the future.

The province of Kwei-chau‡ is rich in coal, ores of copper, iron, and quicksilver.

Consul Jamieson,§ while admitting the great mineral wealth of the province of Yunnan, is of opinion that the difficulties in the way of working are so formidable that capital cannot be profitably employed in mining enterprises, at least in the southern and western sections of the province.

No mineral statistics are published by the Chinese Government.

The Director of the United States Mint states that 3,324 kilos. of gold of the estimated value of £453,614 were produced in 1897.||

Cochin China. (See INDO-CHINA.)

Colombia.¶

Coal.—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

Copper.—Deposits are known to exist, but they are unworked.

Emeralds.—The famous mines of Muzo have been worked continuously to obtain this gem for more than three centuries.

Gold.—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

*Manganese ore.***—This ore is worked about 40 miles east of Colon.

Salt.—Rock salt is mined near Bogota.

TABLE 398.

QUANTITY and VALUE of GOLD, MANGANESE ORE, and SILVER produced during the Years 1896 and 1897.

Mineral.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
Gold†† Kilos.	4,514	£ 616,017	4,514	£ 616,017
Manganese ore Metric Tons	10,668‡‡	10,086	—	—
Platinum¶¶ Kilos.	321	(Not stated.)	364	(Not stated.)
Silver†† Kilos.	52,511	448,131§§	52,511	448,131§§

* Buchrucker, "Ueber eine bergmännische Forschungsreise in der Provinz Schantung." *Zeitschr. f. prakt. Geologie*, 1899, p. 206.

† Consul Hopkins, "Trade of Chefoo for the year 1898." *Dipl. and Cons. Reports*, No. 2,307, Ann. Ser., 1899 [C. 9044-133], p. 11.

‡ Prospectus of the Anglo-French Quicksilver and Mining Concession (Kwei-chau province) of China, Ltd., March 1899.

§ China, No. 3 (1898). *Consular Report on the trade of Yunnan*. [C. 9083] 1898.

¶ *Report of the Director of the United States Mint for 1898*, Washington, 1899.

¶¶ Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898.

** *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.

†† *Report of the Director of the United States Mint for 1898*.

‡‡ "Manganese Deposits of Panama," by E. J. Chibas, *Trans. Am. Inst. M.E.*, Feb. 1897.

§§ Coining value of fine silver.

¶¶ R. P. Rothwell, "The Mineral Industry," Vol. VII. for 1898, New York, 1899, p. 570.

Congo Free State.*

No mines have as yet been worked by Europeans ; but the natives of the Upper Congo dig a little iron ore and copper ore, and extract the metals for the purpose of making weapons, tools and utensils.

Corea.

Corea appears to be rich in minerals, especially in the province of Ping-Yang, where coal and gold are being worked. Large deposits of smokeless coal exist in the country.†

According to a consular report,‡ 1,200 Coreans are now being employed at the gold mines of an American Company in this province. The output of precious metal in Corea was formerly estimated to be worth £600,000 annually ; but the modern stamp mills introduced by American and other companies will probably bring about a largely increased production.

Costa Rica.§

Mining for gold in Costa Rica has hitherto met with so little success that the industry is practically at a standstill. There is no doubt about the existence of auriferous veins, and it is thought that the cyanide process will now enable the precious metal to be extracted with profit.

Cuba.||

The following minerals have been more or less constantly mined in Cuba :—

Asphalt and Petroleum.—There are large deposits in several places.

Clay.—Clay fit for making bricks and tiles is abundant.

Copper ore.—Copper ore has been mined on an extensive scale, particularly at Cobre, in the province of Santiago de Cuba. It occurs in many places in the eastern part of the island.

Gold.—This metal is said to abound in the provinces of Santa Clara and Santiago.

Iron ore.—The latter province possesses extensive deposits of iron ore, and the Juragua mines have been successfully worked for some years. The exports in 1896 were 416,410 metric tons.

Limestone.—This rock abounds everywhere.

Manganese ore.—This ore is extremely abundant in the province of Santiago. The rich deposits are likely to be utilized in the near future.

Curaçao. (See DUTCH WEST INDIES.)

Denmark.¶

Chalk and calcareous marl are quarried near Aalborg. The annual output is from 12,000 to 15,000 tons.

Bog iron ore exists in Jutland,** and in years gone by it was occasionally worked and smelted on a small scale.

* Information furnished by the Département des Finances, Brussels.

† *Eng. Min. Jour.*, Vol. LXVII., 1899, p. 676.

‡ Jordan, "Trade of Corea for the year 1898," *Dipl. and Cons. Reports*, No. 2,304, Ann. Series, 1899 [C. 9044-130], p. 7.

§ Consul Harrison, "Report for the year 1896 on the Trade and Commerce of Costa Rica," *Dipl. and Cons. Reports*, No. 1,913, Ann. Series, 1897 [C. 8277-131].

¶ Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.

¶ Consul Boyle, "Trade and Agriculture of Denmark for the year 1898," *Dipl. and Cons. Reports*, No. 2,141, Ann. Series, 1898 [C. 9044-127].

** Glückauf, Vol. XXXIV, 1898, p. 872.

DENMARK—*continued.*

GREENLAND.*

The quantity of cryolite obtained from Ivigtut during the year 1897 was 13,150 tons, and in 1898 only 8,150 tons, the falling off in the latter year being due to the state of the ice.

During the summer months 134 persons were employed in 1897, and 148 in 1898. These numbers were reduced during each winter by about 60 men.

No accidents occurred during the years 1897 or 1898.

Dutch East Indies.

BANCA.†

The alluvial diggings of the Island of Banca still yield large quantities of tin ore.

TABLE 399.

Year.	Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons.
1896-97	11,400	148,122	9,111
1897-98	10,830	163,542	10,060
1898-99	—	192,972	11,870

The number of persons employed includes not only the actual diggers of the ore, but also the charcoal burners and the smelters.

BILLITON.†

Like Banca, its neighbour Billiton is a large producer of tin ore.

TABLE 400.

Year.	Number of Mines at Work.	Average Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1896-97	85	8,150	92,449	5,687
1897-98	85	7,611	87,825	5,402

* Official Report furnished by the Danish Government.

† Official Return furnished by the Colonial Department of the Dutch Government.

DUTCH EAST INDIES—*continued.*

BORNEO.*

Coal.—The mines of Mahakkam River at Kutei in South-Eastern Borneo produced 15,400 tons of coal in 1896 and 20,000 in 1897. Small quantities of coal were raised at Salimbau in Western Borneo, only 340 tons in 1896 and 300 tons in 1897.

Diamonds.—The estimated output of diamonds from Western Borneo was 2,500 carats in 1895 and 2,704 carats in 1894.

Gold.—The output of gold from the Western Division of Borneo was 1,784 $\frac{1}{8}$ thail, or 96 kilograms, valued at fl. 108,408 in 1896, and 1,820 $\frac{1}{2}$ thail, or 98 kilograms, valued at fl. 110,595 in 1897, and in the various other divisions the total output was 2,059 $\frac{1}{2}$ thail, or 79 kilograms, valued at fl. 28,247.

CELEBES.*

Gold is known to occur in various parts of Celebes, and several companies have lately been formed in Amsterdam for the purpose of exploring and working the deposits of the precious metal. The Soemalata Mining Co. obtained 140 tons of ore in 1896 and 247 tons in 1897, and the Pulehle Mining Co. obtained 1,520 tons of ore in 1896–97.

JAVA.†

Among the mineral productions of Java may be named coal, gold, iodine, manganese ore, and petroleum.

Coal.—798 tons of coal were produced from a mine in the Sedan district during the year 1895–96.

Gold.—The natives, especially the women, obtain some gold by washing river sand in wooden bowls. Several gold mining companies have been started with European capital, and rich gold ore is being exported to Liverpool.

Iodine.—The Goenoeng Kendeng district has springs containing iodides in solution, from which 2,525 kil. of crude iodide of copper were manufactured in 1896, and 2,762 kil. in 1897.

Manganese.—Manganese ore is produced in the regencies of Pengasih and Nanggoelan. The output was 3,000 tons in 1896 and 5,200 tons in 1897.

Petroleum.—Petroleum occurs in various parts of the island, and is obtained on a large scale by borings. The output of the wells at Wonokromo and Blora increased from 1,201,000 cases (1 case = 37.8 litres) in 1896 to 1,513,242 cases in 1898.

SINGKEP.*

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

TABLE 401.

Year.	Number of Mines at Work.	Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1896–97 	12	1,837	12,108	745
1897–98 	12	1,658	11,139	685

About two-thirds of the persons were engaged at the tin diggings proper, and one-third in getting charcoal and smelting the ore.

* Official Return furnished by the Colonial Department of the Dutch Government.

† Acting Consul McLachlan, "Trade of Java for the Year 1898." *Dipl. and Cons. Reports*, No. 2,253, Ann. Series, 1899 [C. 9044-79].

DUTCH EAST INDIES—*continued.*

SUMATRA.*

Although coal and petroleum are the most important minerals produced in the island at the present time, it has lately been discovered that Sumatra contains payable deposits of gold, and a stamp mill and cyanide plant are now being erected at Redjang Labong in the southern end of the island.

Sumatra's principal petroleum wells are on the east coast at Langkat; they yielded 1,851,512 cases (1 case=37·8 litres) of refined petroleum in 1896, and 4,564,987 in 1897. The oil is exported to the Straits Settlements, Burmah, Siam, Cochin China, and elsewhere.

TABLE 402.

NUMBER OF PERSONS EMPLOYED and QUANTITY OF COAL PRODUCED at COAL MINES in 1897 and 1898.

Year.				Number of Persons Employed.	Quantity of Coal produced.
					Metric Tons.
1897	...	...	...	1,874	142,850
1898	...	...	...	1,996	149,434

Dutch Guiana or Surinam.

The estimated quantity of gold produced in 1898 was 865 kilograms,† valued at £98,771.‡ It was obtained almost exclusively from alluvial deposits.

Dutch West Indies.§

ARUBA.

Gold mining has been carried on for many years by an English company.

Phosphate of lime was quarried with great profit between the years 1884 and 1892; in spite of lower prices the deposits are still being worked, and the quantity exported last year was 12,551 metric tons, of which Great Britain took 6,409 metric tons and Germany 4,709 metric tons.

BONAIRE AND ST. MARTIN.

Salt is obtained by the natural evaporation of sea water at both these islands. In 1897 the export of salt from Bonaire was 30,059 barrels, valued at 18,035 florins or £1,503, and from St. Martin 364 barrels, valued at 258 florins or £21.

CURAÇOA.

The phosphate of lime mines in this island have been at a standstill since 1895. The amount of bay salt produced does not appear to be known exactly.

* Official Return furnished by the Colonial Department of the Dutch Government; and Truscott, "The Position of Gold Mining in the Dutch East Indies." *Min. Jour.*, Vol. LXIX., 1899, p. 925.

† Official Return furnished by Colonial Department of the Dutch Government.

‡ Export value.

§ Consul Jeaurun, "Trade of Curaçoa and Dependencies for the year 1898." *Dipl. and Cons. Reports*, No. 2,244, Ann. Series, 1899 [C. 9044-70].

Ecuador.*

It is said that gold abounds, though the yearly output is small. It is obtained mainly from alluvial deposits, but the auriferous veins are being tested on a commercial scale.

TABLE 403.

ESTIMATED QUANTITY and VALUE of GOLD and SILVER produced in 1897.

1897.			
Gold.		Fine Silver.	
Quantity.	Value.	Quantity.	Coining Value.
Kilos. 200	£ 27,289	Kilos. 240	£ 2,053

Egypt.

Little or nothing is being done in the way of mining at the present day. Granite, porphyry, and limestone are quarried.

Salt.†—The natural evaporation of the waters of Lake Mareotis leaves a considerable quantity of salt, and this source of supply is likely to be largely utilized in the near future.

Soda.†—It is now stated that Wady Natron, well known to the ancients, is capable of supplying the natural carbonate of soda at lower prices than are paid for the artificial product. If this proves to be the case, a large output of natural soda is expected. The mineral is found: (1) dissolved in the water of certain lakes; (2) in the form of a crust lying on the surface of the water, or falling to the bottom; (3) as an efflorescence in marshes adjoining the lakes.

SOUDAN.‡

The possible mineral wealth of the Soudan is practically unknown. Gold mines were once worked in the mountains south of Fazogl. Iron ore is found in Bahr Ghazal Province and also in Darfur.

Formosa.§

The Island of Formosa contains deposits of coal, gold, sulphur, and petroleum.

Coal is mined near Kelung on a small scale, and a few thousand tons are exported annually. It is said that the Japanese are extracting large quantities of gold.

* Consul Söderström, "Trade of Quito for the year 1897." *Dipl. and Cons. Reports*, No. 2,101, Ann. Ser., 1898 [C. 8648-123].—Consul Chambers, "Trade of Quayaquil for the year 1898." *Dipl. and Cons. Reports*, No. 2,246, Ann. Ser., 1899 [C. 9044-72].—*Report of the Director of the United States Mint for 1898*.

† *Prospectus of the Egyptian Salt and Soda Company, Ltd.*, 6th November 1899.

‡ Despatch from H.M. Agent and Consul-General at Cairo, enclosing a Report on the Soudan by Sir W. Garston, K.C.M.G.—*Egypt*, No. 5 (1899) [C. 9352].

§ *Mining Journal*, Vol. LXIX, 1899, p. 1024, and *Engineering*, Vol. LXVIII., 1899, p. 337.

France.

Coal.—Coal mining is by far the most important mineral industry in France, for its collieries employ more persons than all the other mines and quarries put together. 65 per cent. of the coal obtained in France during the year 1898 was produced in the two departments of the Nord and the Pas-de-Calais. The mines of the important Anzin Company near Valenciennes yielded 3,168,000 tons, or 197,000 tons more than in the previous year, whilst the output of the Lens Company's collieries in the Pas-de-Calais reached 2,977,148 tons, or 279,000 tons more than in 1897.

The total quantity of brown coal produced during the year 1898 amounted to 529,977 tons, or an increase of 69,000 tons. The quantity of peat obtained in 1898 was less than in the previous year.

Iron ore.—92 per cent. of the iron ore raised in France is oolitic hydrated peroxide, which is principally obtained from mines and openworks near Nancy, Longwy, and Briey, in the department of Meurthe-et-Moselle. The iron-producing strata are at the top of the Liassic rocks, and are of the same geological age as those which are so largely worked in the adjoining territories of Lorraine and Luxemburg.

Iron pyrites.—Nearly all the iron pyrites is the produce of the Sain-Bel mines (Rhône).

Lead ore.—The principal lead mine is at Pontpéan in Brittany.

Manganese ore.—Carbonate of manganese is worked on a large scale at Las Cabesses mine (Ariège), and pyrolusite at the Romanèche and Grand-Filon mines (Saône-et-Loire).

Salt.—Much of the salt comes from a thick bed of rock salt in the Upper Trias in the department of Meurthe-et-Moselle. The bay-salt is the result of the evaporation of sea-water in marshes on the shores of the Atlantic and the Mediterranean.

Zinc ore.—The two largest workings for zinc are those of Malines (Gard) and Bormettes (Var).

TABLE 404.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1897 and 1898.

1897.*

Kind of Mines.	Under-ground.				Above-ground.					Total. Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	5,048	6,215	90,430	101,693	4,565	2,535	4,949	29,659	41,708	143,401
Other mines ...	67	194	9,259	9,520	177	218	257	2,931	3,583	13,103
Total ...	5,115	6,409	99,689	111,213	4,742	2,753	5,206	32,590	45,291	156,504

* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1897*, p. 38.

FRANCE—continued.

TABLE 407.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1897 and 1898.*

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Aluminous earth	465	5,910	375	4,301
Asbestos	55	41,250	38	26,600
Barytes	3,209	43,680	2,763	36,690
Bauxite	41,740	276,055	36,723	335,667
Cement	976,813	23,582,357	1,072,025	26,798,102
Chalk	36,597	545,667	50,115	742,140
Clay {	70,713	1,336,113	68,412	1,207,396
	318,185	1,667,141	295,913	1,742,659
	4,953,617	6,069,751	5,125,439	6,167,728
	306	16,147	225	11,873
Flagstone	66,648	1,445,064	66,482	1,413,599
Fluor spar	2,722	40,802	3,077	46,155
Fuller's earth	4,000	17,400	3,850	16,747
Gypsum {	1,382,269	12,525,685	1,462,304	13,191,070
	292,753	1,324,226	290,611	1,201,761
Lignite (Pyritiferous)	26,942	123,379	19,545	87,952
Lime	4,221,580	36,993,244	4,325,495	38,527,123
Lithographic stone	210	123,750	211	123,013
Magnesium carbonate	30	1,500	30	1,500
Marble	118,675	4,635,668	124,161	4,969,154
Marl	1,268,013	1,556,299	1,217,861	1,475,109
Millstones	32,175	1,220,414	38,929	3,636,173
Ochre	32,299	780,901	33,780	790,060
Onyx	54	3,000	54	3,000
Paving stone	568,677	9,590,524	568,483	9,493,389
Phosphate of lime	535,390	14,264,433	568,558	15,579,787
Sand, gravel, and flint	5,018,247	8,100,902	4,953,217	8,020,547
Slate {	341,887	18,207,938	330,309	20,674,143
	1,143	156,410	1,318	192,760
Steatite, talc, and asbestos	10,629	214,047	9,955	191,615
Stone for building	10,105,438	46,775,514	9,989,416	49,453,685
„ (broken for ballast)	11,477,817	24,192,806	11,915,093	25,206,263
„ for mosaic work	2,500	62,500	2,500	62,500
Whetstones	1,908	318,319	1,899	311,315
Total value in Francs	—	216,258,796	—	231,741,576
„ £ sterling	—	£8,650,352	—	£9,269,663

TABLE 408.

DEATHS from ACCIDENTS at MINES during the Years 1897 and 1898.†

Kind of Mines.	1897.						1898.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Anthracite, brown coal, and coal.	136	17	153	1·34	·41	1·07	133	26	159	1·26	·80	1·07
Other mines ..	24	3	27	2·52	·84	2·00	29	8	37	3·06	2·00	3·75
Totals	160	20	180	1·44	·44	1·1	162	34	196	1·41	·72	1·21

* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1897, p. 58; 1898, p. 61.*† *Ibid.*, 1897, p. 72; 1898, p. 74.

FRANCE—*continued.*

TABLE 409.

DEATHS from ACCIDENTS at QUARRIES during the Years 1897 and 1898.*

Kind of Quarries.	1897.						1898.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Underground ..	49	1	50	3.57	.13	2.24	44	2	46	3.21	.23	3.04
Open	—	99	99	—	.91	.91	—	100	100	—	.91	.91
Total	49	100	149	3.57	.84	1.13	44	102	146	3.21	.87	1.12

French Guiana.†

TABLE 410.

QUANTITY of GOLD produced in 1897 and 1898.

1897.				1898.			
Gold.				Gold.			
Quantity.	Value.			Quantity.	Value.		
Kilos. 2,311	{ Francs ... 6,300,000 £ sterling 252,000			Kilos. 2,321	{ Francs ... 6,388,000 £ sterling 255,520		

Like the other Guianas, the French Colony is auriferous, and it is probable that its resources as a gold-producing country are to a great extent undeveloped.

The little island called Grand-Connétable is said to be entirely composed of phosphate of lime; 6,605 tons were raised in 1894; no later figures are available.

French Possessions (*See ALGERIA, FRENCH GUIANA, INDO-CHINA, NEW CALEDONIA, SENEGAL, and TUNIS*).

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1897*, p. 72; and 1898, p. 74.

† *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année, 1897*, p. 80; et pour l'année, 1898, p. 86.

German East Africa.*

Coal, gold, iron ore, garnets, mica, and salt are known to exist in the Protectorate.

A rich deposit of coal has been discovered* close to the north end of Lake Nyassa, and it will be of importance for the steamship service.

Gold-bearing quartz occurs in the province of Usambara, but it is too poor to pay for working.

Bornhardt† considers that some deposits of garnets and mica promise good results.

German Empire.

The importance of the mining industry of the German empire is apparent from the following tables, which show that in 1898 its mines employed 491,692 persons, and produced nearly 128 million tons of coal, and 10½ million tons of iron ore, besides other minerals, with a total value of more than 46 millions sterling.

Amber.—For many years the amber trade has been almost entirely in the hands of the firm of Stantien & Becker of Königsberg. Difficulties having arisen between this firm and some of the smaller traders, the Prussian Government have cut the gordian knot by purchasing Messrs. Stantien & Becker's mines and factories, which will now be carried on as a State undertaking, like its numerous collieries and its mines of potassium salts. The magnitude of the firm's operations will be gathered from the fact that nearly half a million sterling was voted by the Government to defray the purchase.

Coal.—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany; the principal workings are in the provinces of Brandenburg and Saxony.

There are three principal coal-mining districts in Prussia: (1) The Lower Rhine and Westphalian Basin, which is by far the most important; (2) Silesia, and especially Upper Silesia; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age; near Hanover there are extensive workings in the Wealden beds.

Copper.—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

Iron Ore.—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. These sources of supply are, however, of far less importance than the stratified ore of Jurassic age in Luxemburg and Lorraine. Indeed, the iron field upon the confines of France and Germany is at the present moment the greatest ore-producer of Europe. It is estimated that Luxemburg possesses 14 sq. m. (37 sq. km.), Germany 160 sq. m. (414 sq. km.), and France 208 sq. m. (540 sq. km.) of iron territory, in which ore can be raised at a profit. The so-called "iron ore formation" consists of five main beds of oolitic iron ore interstratified with marl and limestone, with an average thickness of 105 ft. (32 m.), of which rather more than one-half is available iron ore. The ore contains on an average 36 per cent. of iron and 1·7 per cent. of phosphoric acid.‡

Lead Ore.—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Prussia.

Salts.—Kainite and other potassium salts are mined in the province of Prussian Saxony and the Duchy of Anhalt; of late years Hanover has had a share in the production of these important and not very widely spread minerals, and a mine in Brunswick added to the yield in 1897. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

Zinc Ore.—Upper Silesia is the mainstay of the German zinc industry.

* "Ueber die Kohलगewinnung im nördlichen Nyassagebiet." *Glückauf*, Vol. XXXIV., 1898, p. 906; and Sir F. Lascelles, "Report on the German Colonies in Africa," No. 432, Misc. Ser. [C. 8640-3], 1897, pp. 4 and 17.

† Bornhardt, "Ueber die bergmännischen und geologischen Ergebnisse seiner Reisen in Deutsch-Ostafrika." *Zeitschr. d. D. geol. Ges.*, Vol. L., Berlin, 1899, and *Zeitschr. f. prakt. Geologie*, 1899, p. 217.

‡ Hoffmann, "Das Vorkommen der oolithischen Eisenerze (Minette) in Luxemburg und Lothringen." *Glückauf*, Vol. XXXV., 1899, p. 640.

GERMAN EMPIRE—*continued.*

TABLE 411.

PERSONS EMPLOYED at the MINES of the GERMAN EMPIRE.

Mineral.	1897.*				1898.†			
	Under-ground.	Above-ground.		Total Under and Above Ground.	Under-ground.	Above-ground.		Total Under and Above Ground.
		Males.	Females.			Males.	Females.	
I.— <i>Coals and Asphalt.</i>								
Asphalt	94	152	—	246	107	133	—	240
Brown coal	17,355	21,694	1,008	40,057	20,046	21,675	1,091	42,812
Coal... ..	256,992	74,601	4,581	336,174	274,445	78,626	4,624	357,695
Graphite	115	118	—	233	144	72	—	216
Petroleum	—	432	—	432	—	441	—	441
Total	274,556	96,997	5,589	377,142	294,742	100,947	5,715	401,404
II.— <i>Salts.</i>								
Boracite	—	—	—	—	—	—	—	—
Kainite	908	1,030	—	1,938	1,232	1,140	3	2,375
Magnesium salts	—	—	—	—	—	—	—	—
Potassium salts other than kainite ...	4,329	2,308	5	6,642	4,660	2,444	3	7,107
Rock salt	561	335	9	905	501	347	9	857
Total	5,798	3,673	14	9,485	6,393	3,931	15	10,339
III.— <i>Ores.</i>								
Arsenic ore	181	199	—	380	190	198	—	388
Cobalt, nickel, and bismuth ores ...	477	148	13	638	455	156	21	632
Copper ore	11,303	3,116	1	14,420	11,359	3,093	2	14,454
Iron ore	22,771	8,275	1,283	32,329	22,534	8,872	1,266	32,672
Iron pyrites	318	203	—	521	336	183	—	519
Lead ore	7,199	4,773	413	12,385	7,758	4,860	390	13,008
Manganese ore	265	90	7	362	299	81	4	384
Silver and gold ores	2,809	1,235	1	4,045	2,674	970	1	3,645
Tin ore	15	29	—	44	13	29	—	42
Uranium and tungsten ores	20	21	—	41	30	27	—	57
Zinc ore	7,732	3,833	2,184	13,749	7,907	3,962	2,278	14,147
Other ores	—	—	—	—	1	—	—	1
Total	53,090	21,922	3,902	78,914	53,556	22,431	3,962	79,949
Total for the German Empire	333,444	122,592	9,505	465,541	354,691	127,309	9,692	491,692
Grand Duchy of Luxemburg—iron ore	3,281	2,381	—	5,662	3,268	2,380	—	5,648

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1898, Berlin, IV. Heft.† *Ibid.*, 1899.

GERMAN EMPIRE—continued.

TABLE 412.

PERSONS EMPLOYED at WELLS producing BRINE or other MINERAL SOLUTIONS during the Years 1897 and 1898.

Mineral Solution.	1897.*			1898.†		
	Men.	Women.	Total.	Men.	Women.	Total
Sodium chloride	3,323	13	3,336	3,427	13	3,440
Potassium chloride	2,353	18	2,371	2,747	22	2,769
Sulphates or chlorides of sodium, potassium, magnesium, or aluminium. }	649	10	659	656	12	668
Total	6,325	41	6,366	6,830	47	6,877

TABLE 413.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1897 and 1898.

Mineral.	1897.*		1898.†	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
I.—COALS, ASPHALT, &c.				
	Metric Tons. (Not stated.)	Marks.	Metric Tons. (Not stated.)	Marks.
Amber	—	—	—	—
Asphalt	61,645	378,534	67,649	416,338
Brown coal	29,419,503	66,250,567	31,648,498	73,359,476
Coal	91,054,982	648,938,742	96,279,992	710,256,973
Graphite	3,861	264,504	4,593	391,664
Petroleum	23,303	1,396,444	25,789	1,578,208
Total value	—	717,228,791	—	786,002,659
II.—SALTS.				
Boracite	198	40,887	230	42,985
Kainite	992,389	13,944,029	1,103,643	15,343,425
Magnesium salts	2,601	22,546	2,444	21,108
Potassium salts, other than kainite ...	953,798	12,120,574	1,105,212	14,306,511
Rock salt	763,412	3,217,191	804,658	3,354,623
Total value	—	29,345,227	—	33,068,652
III.—ORES.				
Arsenic ore	3,777	224,085	3,540	209,658
Cobalt, nickel, and bismuth ores ...	3,355	559,108	3,157	554,179
Copper ore	700,619	19,010,207	702,781	19,684,607
Iron ore	10,116,970	48,903,250	10,544,295	49,661,288
Iron pyrites	133,302	964,467	136,849	970,354
Lead ore	150,179	13,015,537	151,601	13,648,513

* Vierteljahrshfte zur Statistik des Deutschen Reichs; Jahrgang, 1898, Berlin, IV. Heft.

† Ibid., 1899.

GERMAN EMPIRE—*continued.*

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1897 and 1898—*continued.*

Mineral.	1897.		1898.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES— <i>cont.</i>				
	Metric Tons.	Marks.	Metric Tons.	Marks.
Manganese ore	46,427	461,423	43,354	447,145
Silver and gold ores	9,708	1,453,084	12,413	1,346,627
Tin ore	55	23,926	51	14,202
Uranium and tungsten ores	38	33,468	50	46,110
Vitriol and alum ores, other than iron pyrites.	225	1,351	188	1,128
Zinc ore	663,850	16,881,357	641,706	22,047,276
Total value	—	101,531,263	—	108,631,087
Total value for the German Empire in marks.	—	848,105,281	—	927,702,398
Total value for the German Empire in £ sterling.	—	£42,405,264	—	£46,385,120
Grand Duchy of Luxemburg—iron ore	5,349,010	11,184,440	5,348,951	11,147,349

TABLE 414.

QUANTITY and VALUE of MINERALS produced from BRINE, &c. WELLS during the Years 1897 and 1898.

Mineral Solution.	1897.*		1898.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
1. Alkaline sulphates :—				
(a.) Potassium sulphate... ..	13,774	2,262,882	18,853	3,053,588
(b.) Potassium and magnesium sulphate.	7,812	596,315	13,982	1,037,939
(c.) Sodium sulphate	68,822	1,736,791	69,111	1,810,037
2. Earthy sulphates :—				
(a.) Aluminium sulphate	37,053	2,454,737	35,366	2,259,808
(b.) Alum	2,995	295,353	4,069	364,344
3. Magnesium chloride	18,014	257,175	19,819	387,893
4. Magnesium sulphate	35,072	622,338	30,295	490,669
5. Potassium chloride	16,001	23,057,692	191,347	25,540,882
6. Salt (sodium chloride)	543,272	12,136,514	565,683	12,464,350
Total value in marks	—	43,419,797	—	47,409,510
„ „ £ sterling	—	£2,170,989	—	£2,370,475

The following tables give the output and value of some of the more important minerals, classified according to the States in which they were produced.

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1898, Berlin, IV Heft.

† *Ibid.*, 1899.

GERMAN EMPIRE—continued.

TABLE 415.

Brown Coal.

State.	1897.*		1898.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Anhalt	1,219,704	3,389,956	1,332,844	3,734,059
Bavaria	41,098	104,383	51,818	182,309
Brunswick	1,057,192	3,170,991	1,053,710	3,160,970
Hesse	220,923	550,716	218,384	600,292
Prussia	24,222,911	53,296,979	26,035,415	59,106,839
Saxe Altenburg	1,535,876	2,927,678	1,701,129	3,451,004
Saxony	1,073,239	2,665,433	1,180,927	2,912,688
Other German States	48,560	144,431	74,271	211,315
Total value in marks	29,419,503 }	66,250,567	31,648,498 }	73,359,476
" " £ sterling		£3,312,528		£3,667,974

TABLE 416.

Coal.

State.	1897.*		1898.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Alsace-Lorraine	1,057,544	8,839,438	1,074,150	9,092,700
Bavaria	1,007,403	9,636,829	1,057,865	10,377,818
Prussia	84,253,393	582,660,597	89,573,528	641,861,342
Saxony	4,571,685	46,252,857	4,406,795	47,340,302
Other German States	164,957	1,549,021	167,654	1,584,811
Total value in marks	91,054,982 }	648,938,742	96,279,992 }	710,256,973
" " £ sterling		£32,446,937		£35,512,849

TABLE 417.

Rock Salt.

State.	1897.*		1898.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Prussia	310,754	1,444,787	326,825	1,474,160
Württemberg	233,242	867,226	243,359	870,637
Other German States	219,416	915,178	234,474	1,009,825
Total value in marks... ..	763,412 }	3,217,191	804,658 }	3,354,623
" " £ sterling		£160,859		£167,731

* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1898, Berlin, IV. Heft.

† *Ibid.*, 1899.

GERMAN EMPIRE—continued.

TABLE 418.

Iron Ore.

State.	1897.*		1898.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Alsace-Lorraine	5,360,840	12,317,594	5,949,777	14,420,049
Bavaria	175,305	726,718	175,023	755,737
Brunswick	108,502	215,799	117,347	235,011
Hesse	205,476	1,580,353	159,430	1,224,593
Prussia	4,183,536	33,731,064	4,018,731	32,538,555
Waldeck... ..	31,097	126,471	31,488	127,906
Other German States	52,213	205,251	92,499	359,437
Total value in marks... ..	{ 10,116,969 }	48,903,250	{ 10,544,295 }	49,661,288
" " £ sterling		£2,445,162		£2,483,064
Grand Duchy of Luxemburg	{ 5,349,010 }	11,184,440	{ 5,348,951 }	11,147,349
		£559,222		£557,367

TABLE 419.

Silver and Gold Ores.

	1897 *		1898.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Saxony	9,702	1,433,478	12,370	1,335,163
Other German States	6	19,606	43	11,464
Total value in marks... ..	{ 9,708 }	1,453,084	{ (a) 12,413 }	1,346,627
" " £ sterling		£72,654		£67,331

(a) 2,847 kilos. of fine gold and 480,578 kilos. of fine silver were extracted at the Metallurgical Works in 1898.

According to a return of the Miners' Sick and Accident Clubs for 1898‡, the deaths from accidents among persons employed in and about mines in the German Empire have been as follows :—

TABLE 420.

DEATHS FROM ACCIDENTS AT MINES AND OTHER MINERAL WORKINGS IN GERMANY.

Year.	Deaths.	Death-rate per 1,000 Persons Employed.§	Year.	Deaths.	Death-rate per 1,000 Persons Employed.§
1886	864	2·51	1893	956	2·27
1887	816	2·35	1894	814	1·91
1888	791	2·21	1895	932	2·16
1889	866	2·31	1896	987	2·21
1890	871	2·19	1897	961	2·05
1891	1,026	2·44	1898	1,253	2·53
1892	869	2·05			

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1898, Berlin, IV., Heft.

† *Ibid.*, 1899.

‡ *Vierzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1898*, Berlin.

§ The number of deaths is liable to slight alterations every year in consequence of persons dying after a time from injuries originally classed as non-fatal.

GERMAN EMPIRE—continued.

TABLE 421.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1898.*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines	46,179	110	—	110	2.35
Coal mines	350,206	1,037	3	1,040	2.97
Ore mines and smelting works...	75,847	68	—	68	.90
Salt mines and brine works	16,038	23	—	23	1.43
Other mineral workings... ..	6,816	12	—	12	1.76
Total	495,086	1,250	3	1,253	2.53

Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

BAVARIA.†

TABLE 422.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1897 and 1898.

Kind of Mines or Mineral Workings.	1897.		1898.		Kind of Mines or Mineral Workings.	1897.		1898.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Barytes	47	131	87	152	Ochre, &c.	89	117	92	247
Basalt	620	924	737	1,937	Paving stones	271	769	278	905
Brown coal	210	561	243	604	Petroleum... ..	13	12	14	6
Cement marl	195	5	232	12	Porcelain earth	127	129	186	520
Coal	5,792	10,957	6,080	11,367	Salt, rock	103	128	106	144
Copper ore	42	21	14	30	„ from brine	242	517	279	614
Emery	9	17	9	16	Sand	21†	41†	50§	156§
Feldspar	31	86	30	78	Sandstone§	994	2,138	1,049	3,029
Fireclay	578	1,180	507	1,372	Slate (roofing and slabs)	87	213	136	310
Fluorspar	37	104	29	97	Steatite	76	250	66	218
Granite§	1,620	3,736	2,948	4,409	Whetstone	40	—	24	—
Graphite	233	200	216	320					
Gypsum	69	6	15	4					
Iron ore	698	1,639	738	1,789					
Iron pyrites	35	95	40	96					
Limestone	491	929	591	1,474					
Manganese ore	3	—	1	—					
					Total	12,773	24,905	14,797	29,966

* *Vierzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1898*, Berlin, pp. 42 and 44.

† Return furnished by the Royal Bavarian Mining Department, Munich.

‡ Not including those employed in Zweibrücken and Bayreuth.

§ Not including those employed in Zweibrücken.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 425.

QUANTITY and VALUE of MINERALS obtained from MINES during the Years
1897 and 1898.

Mineral:	1897.*			1898.†		
	Number of Mines.	Output.		Number of Mines.	Output.	
		Quantity.	Value.		Quantity.	Value.
I.—Coals and Asphalt.						
		Metric Tons.	Marks.		Metric Tons.	Marks.
Asphalt	3	11,466	74,825	3	12,822	81,610
Brown coal	382	24,222,911	53,296,979	394	26,035,814	59,127,583
Coal	273	84,253,393	582,660,597	273	89,573,528	641,861,342
Petroleum	6	2,600	292,153	6	2,545	282,051
Total	664	108,490,370	636,324,554	676	115,624,709	701,352,586
II.—Salts.						
Boracite (pure)	—	185	38,652	—	216	40,650
Kainite	9	716,348	10,117,395	11	744,241	10,243,043
Magnesium salts	—	2,248	19,526	—	2,061	17,873
Potassium salts, other than kainite.	7	640,236	7,594,589	9	718,958	8,644,403
Rock salt	5	310,755	1,434,787	5	329,959	1,508,649
Total	21	1,669,772	19,204,949	25	1,795,435	20,454,618
III.—Ores.						
Arsenic ore	3	3,377	202,620	1	3,298	197,880
Cobalt ore	3	121	25,024	2	34	6,800
Copper ore	16	690,338	18,782,718	19	691,867	19,468,210
Gold and silver ore	2	6	19,606	2	43	11,464
Iron ore	495	4,183,536	33,731,064	417	4,020,810	32,540,260
Iron pyrites... ..	4	121,766	836,816	4	128,078	881,646
Lead ore	126	133,158	12,491,520	138	133,637	12,872,427
Manganese ore	12	45,254	412,547	12	42,232	386,765
Nickel ore	3	204	6,322	3	79	2,773
Quicksilver ore	—	—	—	1	—	—
Vitriol ores and alum ores, other than iron pyrites.	—	129	772	—	107	645
Zinc ore	43	663,739	16,879,042	56	641,671	22,046,621
Total	707	5,841,628	83,388,051	655	5,661,856	88,415,491
Gross Total	1,392	116,001,770	738,917,554	1,356	123,082,000	810,222,695
Total value in £ sterling	—	—	£36,945,878	—	—	£40,511,135

* Zeitschr. B. H. S. W., Vol. XLVI., p. 20.

† Zeitschr. B. H. S. W., Vol. XLVII., p. 20.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 428.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS, classified according to kind of MINERAL WORKED, and cause of ACCIDENT, during the Year 1898, and the DEATH-RATE for 1897.*

Cause of Accident.	Deaths from Accidents.					Death-rate per 1,000 Persons Employed.	
	Brown Coal Mines.	Coal Mines.	Ore Mines.	Other Mineral Workings.	Total.	1898.	1897.
Blasting ...	—	33	46	2	41	·09	·09
Falls of ground ...	22	318	22	7	369	·84	·74
On inclines and intermediate shafts.	1	114	3	—	118	·27	·27
In shafts ...	12	121	18	10	161	·37	·33
In levels ...	2	39	3	—	44	·10	·13
Fire-damp ...	—	145	—	—	145	·33	·15
Suffocation ...	1	14	2	—	17	·04	·07
Machinery ...	2	14	2	2	20	·05	·03
Irruptions ...	—	—	—	—	—	—	·03
On surface ...	26	63	5	8	102	·23	·21
Sundries ...	4	68	4	1	77	·17	·08
Total ...	70	929	65	30	1,094	2·48	2·12

The four worst accidents† in the year were :—

- (a.) An explosion of fire-damp and coal dust at Ver. Carolinenglück Colliery in Westphalia, causing 116 deaths.
- (b.) A fire in a shaft at Zollern Colliery, causing 44 deaths.‡
- (c.) The fall of a cage at Cons. Paulus Hohenzollern Colliery, from the rope coming out of the socket, causing 25 deaths.
- (d.) A case of overwinding at General Blumenthal Colliery, causing 17 deaths.

TABLE 429.

EXPLOSIONS of FIRE-DAMP or COAL DUST classified according to CAUSE.§

Cause.		1897.			1898.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total
1. Lighting	1. Naked lights ...	—	2	2	2	6	8
	2. Matches or smoking	1	1	2	—	1	1
	3. Illegally opened ...	4	6	10	3	—	3
	4. In defective condition or injured during work.	1	13	14	1	6	7
	5. Gauze becoming red hot.	2	1	3	—	—	—
	6. Oil or soot on gauze taking fire	—	—	—	—	—	—
	7. Flame driven through gauze by ventilating current.	—	3	3	—	2	2
	8. Flame driven through gauze by improper handling.	6	13	19	5	13	18
	9. Passage of flame when relighting by amorces	1	1	2	—	—	—

* *Zeitschr. B. H. S. W.*, Vol. XLVII., pp. 48–50.

† *Ibid.*, p. 51.

‡ Hundt, "Der Schachtbrand auf Zeche Zollern in Westfalen am 22 Mai 1898." *Zeitschr. B. H. S. W.*, Vol. XLVI 1898, p. 294.

§ *Zeitschr. B. H. S. W.*, Vol. XLVII., pp. 67 and 68.

GERMAN EMPIRE.—PRUSSIA—*continued.*TABLE 429—*continued.*

Cause.		1897.			1898.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.
II. Shot firing ...	10.	3	8	11	1	11	12
III. Underground fires.	11. Ventilating furnaces	—	—	—	—	—	—
	12. Accidental or spontaneous ignition of mineral, timber, or other material.	—	—	—	—	—	—
IV. Miscellaneous	13. Sparks from tools (?)	—	—	—	—	—	—
	14. Sundries or unknown	—	2	2	—	2	2
Total		18*	50	68	12†	41	53

An interesting comparison has lately been published‡ between the accidents at Prussian and at British collieries. In order to make the comparison effective, the British statistics have been reduced to the German headings, and the general results are summed up in the following table :—

TABLE 430.

Country.	Year.	Death-rate per 1,000 Employed.	Percentage of the Total Number of Deaths.							
			Falls of Stone or Coal.	On Inclined Planes.	In Shafts.	Explosions of Fire-damp and Coal Dust.	Haulage.	By Explosives.	Suffocation by Natural Gases.	On Surface.
Coal mines in Prussia	1896	2.58	33.7	13.1	9.7	5.2	3.4	3.1	16.4	9.9
" " " " " " " " " " " "	1897	2.35	34.2	14.7	14.8	8.9	6.7	4.5	2.9	7.9
" " " " " " " " " " " "	1898	2.86	34.2	12.3	13.0	15.6	4.2	3.6	1.5	6.8
" " " United Kingdom	1896	1.48	41.2	6.8	6.6	17.1	9.4	2.7	.1	12.0
" " " " " " " " " " " "	1897	1.32	51.6	8.9	6.1	1.9	11.7	2.2	.3	10.7
" " " " " " " " " " " "	1898	1.28	47.7	8.1	7.6	3.0	9.1	1.8	.3	14.4

The principal points deserving notice are these :—

- (1.) The average death-rate from accidents is decidedly lower at British collieries than at Prussian collieries.
- (2.) Deaths from falls of ground form a smaller proportion of the total number of deaths at Prussian than at British collieries.
- (3.) Deaths from accidents in shafts form a larger proportion of the total number of deaths in Prussian than in British collieries.
- (4.) Deaths from accidents above ground form a much higher proportion of the total number of deaths at British than at Prussian collieries.

* Causing 64 deaths. *Ibid.*, Vol. XLVI., p. 64.

† " " 145 " *Ibid.*, Vol. XLVII., p. 64.

‡ "Die tödlichen Unfälle im preussischen und britischen Steinkohlenbergbau im Jahre 1898." *Glückauf*, Vol. XXXV., 1899, p. 789.

GERMAN EMPIRE.—PRUSSIA—*continued.*

It is flattering to Great Britain to find that the comparative safety of our workings is fully recognized.

The Annual Report of the Dortmund Mining Association,* in discussing the question how the number of accidents may best be diminished, says, that the practice of other countries proves that the plan adopted in Germany of continually increasing the number of officials is not desirable. If a large proportion of overseers, in comparison with the number of the workmen, of itself conduced to safety, British mining would be one of the most dangerous, and German mining one of the safest. This is not the case. Thanks to permanent state of the industry, very favourable natural conditions, and the gradual training in independence of each workman, the British accident ratio is almost the lowest of all, whilst the German figure still remains high.

As verbal misunderstandings may lead to accidents, the Westphalian mining authorities have wisely prohibited the employment underground of persons unacquainted with the German language. This edict, which was published in the "Kölnische Zeitung" on the 2nd December 1898, is aimed against "ignorant Polish workmen, who might meet "with accidents themselves or be a source of danger to their fellow miners from not "understanding orders or warnings." It may be here mentioned that the same danger exists on a far smaller scale, however, in this country, for some Poles are employed in coal mines in Scotland. For their benefit the Special Rules have been translated into Russian, just as the mining regulations in Victoria have been translated into Chinese.

SAXONY.†

TABLE 431.

PERSONS EMPLOYED at MINES during the Years 1897 and 1898.

Kind of Mines.	1897.			1898.		
	Males.	Females.	Total.	Males.	Females.	Total.
Brown coal	2,122	127	2,249	2,318	135	2,453
Coal	22,442	338	22,780	22,491	353	22,844
Ore	5,128	1	5,129	4,620	—	4,620
Total	29,692	466	30,158	29,429	488	29,917

According to the Saxon Year-book, 73,400 persons were dependent upon the 29,917 workers in and about mines.

TABLE 432.

QUANTITY and VALUE of MINERALS obtained during the Years 1897 and 1898.

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes	218	2,466	478	5,082
Bismuth, cobalt, and nickel ores ...	3,031	527,807	3,043	544,678
Brown coal	1,073,239	2,665,433	1,180,928	2,912,616
Coal	4,571,685	46,252,857	4,436,455	47,316,005

* *Jahresbericht des Vereins für die bergbauischen Interessen im Oberbergamtsbezirk Dortmund für das Jahr 1898* Essen, 1899, p. 64.

† *Jahrbuch für das Berg- und Hüttenwesen im Königreiche Sachsen auf das Jahr 1899*, Freiberg, pp. 77, 79, 179, and 180.

Greece.

The principal mineral productions of Greece are the ores of iron, lead, manganese, and zinc, and they are chiefly obtained from the Laurium district in Southern Attica.

Improved means of transport are being introduced at the Pentelicus Quarries,* which will considerably reduce the expense of supplying the marble.

Eubœa is further famous for its marble quarries, which supplied large quantities of "cipollino" to ancient Rome.† Work at these quarries has recently been resumed.

Lignite is worked at Koumi, where 15,000 tons are extracted yearly, and at Oropos and Alio-crion.‡

Milo§ yields gypsum, manganese ore, millstones, and sulphur. Seriphos exports iron ore in increasing quantities. Naxos has long been famous for its emery. Zea, though containing deposits of the ores of lead and manganese, exports nothing but a little iron ore.

Salt is obtained from sea water in the Island of Leucados and at Anavyssos near Laurium. The salt industry is a Government monopoly.

TABLE 434.

PERSONS EMPLOYED at MINES during the Year 1894.||

Under-ground.			Above-ground.			Total Under and Above Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
3,393	17	3,410	2,491	196	2,687	6,097

TABLE 435.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.¶

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chromite	568	22,720	1,367	54,680
Emery	4,769	507,898	7,742	824,523
Gypsum	75	6,750	96	8,640
Iron ore	419,913	3,779,217	485,159	4,336,431
Lead (argentiferous pig lead) ...	15,747	7,401,090	11,598	5,451,060
„ ore... ..	8,093	299,441	1,139	42,143
Lignite	13,770	137,700	17,310	173,100
Magnesite	12,767	255,340	15,279	305,580
Manganese ore	11,710	351,300	14,097	422,910
Millstones Pieces	15,000	37,500	15,000	37,500
Salt from sea water	16,500	1,650,000	20,000	2,002,000
Sulphur	346	31,140	135	12,150
Zinc ore	24,586	2,089,810	32,520	2,764,200
Total value in francs	{ — }	16,569,906	{ — }	16,434,917
„ „ £ sterling	{ — }	£662,796	{ — }	£657,397

* Consul Walsh, "Trade of the Piræus for the Year 1898." *Dipl. and Cons. Reports*, No. 2,225, Ann. Ser., 1899 [C. 9044-51], p. 8.

† "Modern Working of the old Eubœan Marble Quarries." *Stone*, Vol. XIX., New York, 1899, p. 213.

‡ *Eng. Min. Jour.*, Vol. LXVIII., No. 6, p. 156.

§ Consul Cottrell "Trade of the Cyclades for the Year 1898." *Dipl. and Cons. Reports*, No. 2,252, Ann. Ser., 1899 [C. 9044-78], pp. 9 and 11.

¶ Official Return furnished by the Bureau of Mines, Athens. Later figures not available.

¶ Return furnished by the Bureau of Mines, Athens.

GREECE—*continued.*

TABLE 436.

DEATHS from ACCIDENTS at MINES during the Year 1894.*

Under-ground.			Above-ground.			Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
Males.	Females.	Total.	Males.	Females.	Total.		
9	—	9	—	—	—	9	1.48

Greenland. (*See* DENMARK.)

Guatemala.†

The following minerals are found in different parts of the Republic, viz., the ores of copper, gold, iron, lead, and silver, besides coal, lignite, gypsum, marble, salt, sulphur, and turquoises.

The principal mines being worked in 1897 were :—

- (1) Gold mines in the Departments of Izabal and Baja Vera Paz.
- (2) Silver mines in the Departments of Santa Rosa and Chiquimula.
- (3) Salt mines in the Departments of Alta Vera Paz and Santa Rosa.

Hayti.‡

Coal, copper, quicksilver, and other minerals are said to exist, but at present the deposits have not been developed.

Herzegovina. (*See* AUSTRIA-HUNGARY.)

Holland.§

Holland possesses immense peat bogs,|| which produce about 100 million hectolitres of good fuel annually. Since 1893 the turbaries have been further utilized for making peat litter. There are now nine factories producing it; they employ 2,500 persons, and their total output is more than 220,000 tons of peat litter a year.

There are coal mines at Heerlan and Kerkrade¶; and underground stone quarries are worked at Maastricht and Volkenburg.

TABLE 437.

PERSONS EMPLOYED at MINES during the Years 1897 and 1898.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1897 ...	344	—	344	137	2	139	483
1898 ...	409	—	409	238	2	240	649

* Return furnished by the Bureau of Mines, Athens. Later information about accidents not available.

† Consul Trayner. "Trade of Guatemala for the Year 1897." *Dipl. and Cons. Reports*, No. 2,139, Ann. Ser., 1898 [C. 8648-161].

‡ Acting Consul-General Siordet. "Trade of the Republic of Hayti for the Year 1898." *Dipl. and Cons. Reports*, No. 2,358, Ann. Ser. 1899 [C. 9496-29], p. 6.

§ Official Returns furnished by the Government of the Netherlands.

|| Rommehöller, *Mouvement du Commerce et de l'Industrie des Pays-Bas durant l'exercice 1898*. Rotterdam, 1899, p. 122.

¶ Büttgenbach, "Die Geologie des alten Herzogthums Limburg." *B.N.J. Zeitung*, Vol. LVII., 1898, p. 363.

HOLLAND—*continued.*

TABLE 438.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years 1897 and 1898.

Year.	Under-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1897 ...	40	—	40	95	—	95	135
1898 ...	40	—	40	80	—	80	120

TABLE 439.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
Building stone ... <i>Cubic Metres</i>	2,178	Florins. 4,275	2,000	Florins. 4,000
Coal ... <i>Metric Tons</i>	150,145	381,220	150,398	405,322
Total value in Florins ...	—	385,495	—	409,322
„ „ £ sterling ...	—	£32,125	—	£34,110

TABLE 440.

DEATHS from ACCIDENTS at MINERAL WORKINGS other than MINES during the Years 1897 and 1898.

Year.	Under-ground.			Above-ground.			Total Number of Deaths Under and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Above-ground.	Under and Above Ground.
1897	—	—	—	1	—	1	1	7.40	2.07
1898	—	—	—	—	—	—	—	—	—

Indo-China.

ANNAM.

Annam and Tong-King possesses large deposits of coal, iron ore, and argentiferous lead ore; besides having also asbestos, graphite, kaolin, and marble, and the ores of antimony, copper, gold, manganese, nickel, quicksilver, and tin.*

The “Société des houillères de Tourane” obtained 3,911 tons of coal in 1897 from their collieries, which are situated at Nong-son.† The quantity exported in 1898 was 2,300 tons.‡

Iron ore§ is being smelted on a very small scale by the natives at Nho-Lam in the province of Quang-nam.

* *B.u.h. Zeitung*. Vol. LVIII., 1899, p. 292.

† *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1897*, p. 79.

‡ *Ibid.* 1898, p. 79.

§ Consul Tremleff, “Trade of Saigon and District for the Year 1897.” *Dipl. and Cons. Reports*, No. 2,060, Ann. Ser., 1898 [C. 8648-82].

INDO-CHINA—*continued.*

COCHIN CHINA.*

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895; but the mines do not appear to have been worked since, as no quantity is reported in the French statistics.

TONG-KING.† (*See also ANNAM.*)

The "Société Française des Charbonnages de Hongay" has large open workings for coal in Haton, and a mine 140 m. deep in Nagotma. It exports 15,000 tons of coal a month.

The Hongay coal is generally characterized by the small percentage of ash and of sulphur. On the whole it is an anthracitic coal with a small percentage of hydrogen, and it burns with a short flame and scarcely any smoke.

The Hongay and the Kebao collieries produced altogether 192,597 tons of coal in 1897, and 244,800 tons in 1898.‡

Copper of good quality is produced from the mines in the provinces of Sontay, Langson, and Laokay.

Iron mines are numerous and productive in the provinces of Hanoy and Sontay.

Italy.

An excellent summary § of the mineral industries of Italy is appended to the catalogue of the exhibits made by the Government at the Turin Exhibition of 1898. In a few words, the nature of the principal kinds of mines and quarries may be stated as follows:—

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc and lead ore; these are far more largely worked in Sardinia than in the peninsula itself. Again, in the case of iron ore, it is an island, Elba, which is the mainstay of the industry. England absorbs about two-thirds of the entire output, and Germany most of the remaining third.|| The marble quarries of the Apuan Alps have long been a source of wealth to the country.

The following are a few particulars concerning some of the minerals:—

Alunite.—Quarrying natural alum-stone is a very old industry in the Tolfa hills north-east of Civita Vecchia. The open workings have now given place to underground mining, but the total output at the present day amounts to only a few thousand tons annually.

Asphalt.—A large quantity of bituminous limestone is quarried at Ragusa Superiore in the province of Syracuse. The principal seam is from 13 feet to 20 feet (4 to 6 m.) in thickness, and contains from 16 to 50 per cent. of bitumen. A similar bituminous rock is worked in the Abruzzi.

* *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1896*, p. 76.

† *B.u.h. Zeitung*, Vol. LVIII., 1899, p. 292.

‡ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1897*, p. 79. *Ibid.* 1898, p. 86.

§ *Catalogo della Mostra fatta dal Corpo Reale delle Miniere all'Esposizione Generale Italiana del 1898 in Torino*, Rome, 1898.

|| Consul Tonietti, "Trade of the Island of Elba for the Year 1898." *Dipl. and Cons. Reports*, No. 2,274, Ann. Ser., 1899 [C. 9044-100], p. 4.

d.

OUTPUT, and NUMBER of PERSONS
1897 and 1898.*

	Number of Persons Employed.	Number at Work.	1898.	
			Total Value of Output.	Number of Persons Employed.
	53,576	1,404	Lire. 71,804,071	57,849
	31,520	5,356	31,224,142	32,153
	861	45	246,064	1,098
	3,148	66	3,552,507	3,758
	89,105	—	Lire 106,826,784 £ sterling 4,273,071†	94,858

TABLE 442.

in and about MINES and other MINERAL WORKINGS
(including Sea Salt Workings) during the Years 1897
leading to mineral wrought.

	1897.		1898.	
	Number of Mines or Workings.	Number of Persons Employed.	Number of Mines or Workings.	Number of Persons Employed.
...	1	86	1	96
...	15	180	20	269
...	1	6	1	6
...	15	805	15	1,259
...	12	345	12	367
...	31	1,553	27	1,839
... coal,	55	2,285	51	2,683
... shale.	(a)	(a)	(a)	(a)
...	47	828	40	825
...	11	81	19	133
...	19	1,335	29	2,000
...	10	792	8	840
...	(b)	(b)	(b)	(b)
...	7	80	9	138
...	1	181	1	160
...	(a)	(a)	(a)	(a)
...	2	5	—	—
...	20	489	14	405
...	12	470	9	492
...	26	337	29	355
...	(a)	(a)	(a)	(a)
...	16	701	11	630
...	883	31,246	919	32,030
...	175	11,771	189	13,322
...	1,359	53,576	1,404	57,849

persons employed at petroleum workings.

(b) Included with zinc ore.

* *Servizio Minerario nel 1897*, pp. xlii. and xliii. *nel 1898*, pp. xxxiii. and xlii.
† calculated at 25 Lire = 1l. sterling.

ITALY—continued.

TABLE 443.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1897 and 1898.*

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum-stone	6,500	32,500	7,000	35,000
Antimony ore	2,150	174,320	1,931	219,112
Arsenic ore	34	3,400	—	—
Asphalt, &c.	55,339	948,273	93,750	1,328,224
Boric acid	2,704	865,280	2,650	848,000
Copper ore	93,377	2,156,146	95,128	2,131,497
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	314,222	2,335,557	341,327	2,429,825
Gas, carburetted hydrogen (cubic metres).	298,069	17,861	464,931	18,466
Gold ore... ..	10,723	890,048	9,549	644,134
Graphite	5,650	56,500	6,435	87,115
Iron ore	200,709	2,860,511	190,110	2,746,239
„ „ manganiferous	21,262	170,096	11,150	133,800
Iron pyrites	58,320	780,138	67,191	828,051
Lead ore	(a) 36,860	5,065,825	(b) 34,180	5,231,240
Manganese ore	1,634	75,040	3,002	93,535
Mineral waters	28,680	351,336	28,340	358,960
Peat	14,634	198,130	18,327	246,064
Petroleum	1,932	492,282	2,015	589,129
Quicksilver	20,659	788,910	19,201	661,113
Rock salt	19,801	272,018	18,199	305,735
Salt from springs	11,725	315,500	11,546	297,839
Salt, sea	429,253	4,428,187	451,426	3,552,507
Silver ore	405	428,260	435	380,238
Sulphur, rock	3,314,051	37,310,255	3,362,841	40,375,152
Zinc ore	122,214	8,280,327	132,099	12,061,667
Produce from quarries (value) ...	—	30,197,988	—	31,224,142
Total value in lire	—	99,494,688	—	106,826,784
„ „ £ sterling	—	£3,979,788	—	£4,273,071

(a) Including 660 tons of lead and zinc ore, of the value of 23,200 lire.

(b) Including 250 tons of lead and zinc ore, of the value of 10,000 lire.

TABLE 444.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1897 and 1898.†

Cause.	1897.					1898.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.
Falls of ground ...	114	93	74	1·74	1·44	123	51	99	·88	·48
Suffocation by gases, explosions, and fires.	21	14	25	·26	·22	18	12	27	·21	·11
Falling down shafts, &c., and miscellaneous.	51	14	38	·26	·22	47	15	37	·26	·14
Blasting	8	2	6	·04	·03	10	4	8	·07	·04
Total	194	123	143	2·30	1·90	198	82	171	1·42	·77

* *Rivista del Servizio Minerario* nel 1897, pp. xxv., xxxii., and xliii., nel 1898, pp. xxvi., xxxiii., and xlvi.

† *Ibid.*, 1897, pp. c. and ci., nel 1898, pp. lxi. and lxii.

ITALY—continued.

TABLE 445.

ACCIDENTS at QUARRIES, arranged according to CAUSES, during the Years 1897 and 1898.*

Cause of Accident.	1897.				1898.			
	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.
Falls of ground	24	17	13	·54	33	20	17	·62
Falling down workings, and miscellaneous.	34	7	29	·22	27	8	20	·25
Blasting	4	1	3	·03	5	1	4	·03
Total	62	25	45	·79	65	29	41	·90

Japan.

In addition to its well-known deposits of coal and copper ore, Japan is said to possess great wealth in the ores of gold, iron, lead, silver, and zinc. The most important coal mines are upon the Island of Kiushiu. Sulphur is obtained from volcanic deposits at the surface.

TABLE 446.

PERSONS EMPLOYED at MINES during the Years 1896† and 1897.

Mines.	Persons Employed in the Year.	
	1896.	1897.‡
Coal	53,751	
Other Mines	64,766	
Total	118,517	

In addition to the above, 5,673 persons were employed at other mineral workings during the year 1896.

* *Rivista del Servizio Minerario nel 1897*, p. ciii., nel 1898, p. lxxv.

† *Fifth Statistical Abstract of the Mineral Industry*, published by the Mining Bureau of the Department of Agriculture and Commerce, Tokio, 1897.

‡ Figures are not yet available.

JAPAN—continued.

TABLE 447.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1896* and 1897.†

Mineral or Metal.	1896.		1897.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Antimony, crude } (metal)...	827	23,006	936	15,231
" refined }	517		947	17,501
Arsenic (metal) ...	6	102	13	151
Coal ...	5,013,690	1,275,787	5,647,751	2,066,088
Copper (metal) ...	20,114	720,484	20,770	794,973
Gold ...	Kilos. 963	106,213	Kilos. 1,018	117,727
Graphite ...	215	1,385	204	3,215
Iron, pig ...	27,421	93,376	57,678	85,942
" pyrites ...			5,698	2,407
" speiss ...			Not reported.	—
" vitriol ...			40	54
Lead (metal) ...	1,958	20,514	1,737	18,839
Manganese ...	17,966	12,527	17,351	9,814
Petroleum, refined ...	Litres 37,593,153	38,228	Litres 4,719,903	14,079
" crude ...			" 39,208,411	32,776
Quicksilver ...	2	293	3	446
Salt ...	—	—	Not reported.	—
Silver (metal) ...	Kilos. 64,449	254,471	Kilos. 57,208	200,987
Sulphur ...	12,540	25,114	12,013	29,588
Tin (metal) ...	50	2,267	1 737	18,838
Total value ...	—	2,573,767	—	3,428,656

TABLE 448.

ACCIDENTS at MINES during the Years 1896–8.

	Year.	Killed.	Injured.	Death-rate per 1,000 Persons Employed.
	1896	44	45	0.37
	1897	15	28	†
	1898	67	(Not stated.)	†

Java. (See DUTCH EAST INDIES.)

Johore.§

Gold has been found in one or two places, and the country is rich in iron ore. Important deposits of tin have been discovered in several places, and considerable tin mining is now carried on in the Ulu Johore districts, and some at Bukit More, Padang.

Lourenço Marques. (See PORTUGUESE EAST AFRICA.)

* Fifth Statistical Abstract of Mineral Industry, published by the Mining Bureau of the Department of Agriculture and Commerce, Tokio, 1897.

† Official Return furnished by the Mining Bureau of the Department of Agriculture and Commerce, Tokio.

‡ As the number of persons employed is not yet available the death-rates for 1897 and 1898 cannot be calculated.

§ The Straits Directory, 1899, p. 288.

Luxemburg.

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

Madagascar.*

The mineral wealth of the island appears to be great. In addition to gold, which is found in alluvial deposits widely spread over the island, the ores of antimony, copper, iron, and tin are said to be abundant, to say nothing of asphalt, coal, and petroleum.

Mexico.†

Many minerals are obtained in Mexico. The most important are the ores of copper, gold, lead, and silver. During the past year a substantial increase in output, as compared with 1897-8, is recorded in the case of the first three.

The Compania Minera del Boleo, of Lower California, was the largest exporter of copper in 1898.

TABLE 449.

PERSONS EMPLOYED at MINES during the Year 1897.

	Men.	Women.	Boys.	Total.
	98,466	356	30	98,852

TABLE 450.

VALUE of MINERALS produced and exported during the Fiscal Years 1897-1899.

Mineral.	1897-8.		1898-9.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	\$	Metric Tons.	\$
Antimony ore	5,609	65,873	6,359	101,318
Asphalt	—	190	42	1,382
Coal	106,405	438,261	126,251	507,902
Copper and Copper ore	20,367	4,771,631	22,019	5,601,134
Gold	Kilos. 10,964	7,405,230	Kilos. 13,092	8,843,081
Graphite... ..	907	8,663	1,857	18,237
Gypsum	2,250	11,250	450	2,250
Iron ore	—	—	21	208
Lead	58,514	2,909,705	65,004	3,786,144
Manganese	121	3,326	—	—
Marble	845	85,764	294	30,415
Pumice stone	—	1,300	—	10
Salt	2,893	16,691	1,862	8,605
Silver	Kilos. 1,667,777	68,237,102	Kilos. 1,623,647	66,431,541
Sulphur	280	3,000	—	—
Tin	—	—	—	4
Zinc ore	1,630	22,323	84	840
Total value in \$	—	83,980,309	—	85,333,071
" " £	—	£8,747,949	—	£9,377,748

* Consul Turner "Trade of Madagascar for the Year 1898." *Dipl. and Cons. Reports*, No. 2334, Ann. Ser., 1899 [C. 9496-5].

† Official Return furnished by the Ministry of Finance, Mexico.

MEXICO—*continued*.

TABLE 451.

DEATHS from ACCIDENTS at MINES during the Years 1896 and 1897.

Year.			Number of Deaths.	Death-rate per 1,000 Persons Employed.
1896	...	...	175	1.77
1897	...	...	136	1.37

Morocco.*

There are a few mineral workings in this country ; saltpetre is obtained in two localities ; brine springs and lakes yield salt, and copper ore is extracted from mines worked in a primitive fashion.

Netherlands and its Colonies. (See HOLLAND, DUTCH EAST INDIES, AND DUTCH WEST INDIES.)

New Caledonia.†

The three principal minerals produced by this country are the chromic iron, cobalt ore, and nickel ore.

Chrome Ore.—The output of chrome ore, which dropped in 1897 to one-fifth of what it was in 1896, considerably increased in 1898.

Cobalt Ore.—Here again there is an increased output in 1898 compared with the previous year.

Nickel Ore.—Nickel mining has declined in importance very considerably since 1892, when the output was 83,000 tons ; but in spite of Canadian competition, the outlook in New Caledonia is improving, the quantity obtained in 1898 being more than double that of 1897.

TABLE 452.

PERSONS EMPLOYED at MINES during the Years 1897 and 1898.‡

Year.			White.	Coloured.	Total.
1897	...	...	3,273	1,074	4,347
1898	...	...	3,831	1,259	5,090

* Meakin, "The Mineral Resources of Morocco," *Min. Jour.*, Vol. LXVIII., 1898, p. 1034.

† *Statistique de l'Industrie Minière en France et en Algérie, pour l'année, 1897*, p. 79. *Ibid*, 1898, p. 85.

‡ Official Return furnished by the French Government.

NEW CALEDONIA—continued.

TABLE 453.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral.	Percentage of Metal.	1897.		1898.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Francs.	Metric Tons.	Francs.
Chrome ore	51 (Cr ₂ O ₃)	3,949	200,000	14,300	715,000
Cobalt ore	3 to 5	3,200	320,000	21,000	2,100,000
Copper ore	10	2,200	Not stated.	5,300	Not stated.
Gold ore	—	25	Not stated.	—	—
Lead ore (argentiferous) ...	—	200	Not stated.	—	—
Nickel ore	7.5	26,464	926,000	53,200	2,394,000
Total value in francs ...	—	—	1,446,000	—	5,209,000
„ „ £ sterling			£57,840		£208,360

Nicaragua.*

The exact output of the mines and alluvial diggings does not appear to be known. The exports are given in the table below.

TABLE 454.

Mineral.	1897.		1898.	
Gold (bars and dust) ...	{ Kilos. 1,120 Ozs. 36,000 }	£ 110,000	{ Kilos. 505 Ozs. 16,242 }	£ 53,726
Gold ore	—	—	Lbs. 8,791	60,000

Norway.†

The largest copper mines are those of Sulitelma and Røros, both of which also yield iron pyrites. The Kongsberg mines have long been famous for their native silver, which is sometimes met with in masses of considerable size, and the picked stuff sent to the smelting works contains from 78 to 86 per cent. of the precious metal. The amount of silver obtained by smelting, and derived almost entirely from Kongsberg, was 5,372 kilos., valued at 48,000 kroner in 1897. Mica is quarried, and then prepared for stoves, lamp-glasses, and electrical purposes. Marble and granite are likewise exports of Norway. Beds of infusorial earth are worked at Imbs.

There appears to be no official information about accidents in mines in Norway, similar to that which is given by the sister country.

* Consul Chambers, "Trade of Nicaragua for the Years 1897 and 1898." *Dipl. and Cons. Reports*, Nos. 2,136 and 2,329, Ann. Ser., 1898 and 1899 [C. 8,648-158, and C. 9,496].

† *Norges Officielle Statistik, Tredie Række No. 285. Tabeller vedkommende Norges Bergværksdrift i Aarene 1894, og 1895 Kristiania, 1898*, and Consul-General Dundas, "Trade of Norway for the Year 1898." *Dipl. and Cons. Reports*, No. 2,299, Ann. Ser., 1899 [C. 9,044-125].

PERU—*continued.*

400 kilograms in the financial year 1898-9; but the means of communication are so difficult that the mineral resources of this rich auriferous district cannot be properly utilized.

Petroleum.—Great expectations are entertained of the future of the petroleum industry, though the output of the wells at the present time is only 9,000 tons a year.

Silver ore.—This is the principal mineral worked in Peru; the largest mines are at Cerro de Pasco. The output of silver has diminished considerably, on account of the drop in price of the metal.

Salt.—The production of salt, a Government monopoly, is an industry of importance.

Sulphur.—Deposits of sulphur are found in many of the extinct volcanoes.

TABLE 457.

MINERALS produced during the YEARS 1897 and 1898.

Mineral.					1897.	1898.
					Metric Tons.	Metric Tons.
Antimony (Exported)	...	...	...	...	45	29
Borates	...	...	...	...	27,500	—
Coal	...	...	...	...	—	10,000 (a)
Copper (Metal)	...	...	...	...	3,500	3,500 (a)
Gold (Fine)	...	...	...	...	Kilos. 767	Kilos. 1,000 (a)
Lead (Exported)	...	...	...	...	144	9
Petroleum	Crude	...	...	...	8,000	9,000 (a)
	Refined	...	...	...	2,500	
Salt	...	...	...	...	17,938	18,000 (a)
Silver (Fine)...	...	...	...	...	Kilos. 163,816	Kilos. 165,000 (a)
Tin (Exported)	...	...	...	...	29	2

(a) Approximate output.

Philippine Islands.*

It has long been known that the mineral resources of these islands are very varied.

Coal.—Coal and lignite are found on many of the islands.

Copper.—Copper ore occurs in various places and has already been worked.

Gold.—Large quantities of gold have been extracted from alluvial deposits and quartz veins, and it seems likely that gold mining will become a prominent industry of the islands.

Iron and Lead.—Iron ore is found at least on three of the islands, and so is galena.

Petroleum and Natural Gas.—Mineral oil is known in Cebú, Panay, and Leyte, and Cebú has likewise natural gas.

* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.

Porto Rico.*

The island of Porto Rico possesses mineral resources which are not likely to remain undeveloped by its new owners.

Coal.—Coal has been found in the western part of the island and at Guatemala.

Copper.—The ores of copper are found in several places.

Gold.—From six to eight thousand pesos (dollars) worth of gold a year is panned out from the beds of creeks and rivers.

Gypsum.—This mineral is common.

Iron Ore.—There are valuable deposits of iron ore, especially north of Juncos.

Lignite and Peat.—There is an abundance of these two minerals.

Phosphate of Lime.—Phosphate rock is everywhere abundant. It has been worked on the islet of Mona in the San Domingo Channel, and about 9,000 tons were exported to Europe in 1894.

Salt.—Rich deposits of salt are known in several places.

Portugal.†

The deposit of copper-bearing pyrites at San Domingos, in Southern Portugal, furnishes most of the mineral wealth of the country at the present time.

TABLE 458.

PERSONS EMPLOYED at MINES during the Years 1897 and 1898.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
Coal	322	—	322	193	37	230	552
Iron ore	23	—	23	22	—	22	45
Other mines ...	1,131	—	1,131	1,844	272	2,116	3,247
Total for 1898	1,476	—	1,476	2,059	309	2,368	3,844
Total for previous year	1,299	—	1,299	1,717	430	2,147	3,446

TABLE 459.

PERSONS EMPLOYED at QUARRIES during the Year 1890.‡

Under-ground.			Above-ground.			Total Under and Above Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
419	—	419	4,240	57	4,297	4,716

* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines." *Eng. Mag.*, Vol. XVII., 1899, p. 242.—"Zur geologie der Insel Mona in West-Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII., 1899, p. 337.—Domenech "Porto Rico; her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529.

† Official Return furnished by the Portuguese Government.

‡ No later return available.

PORTUGAL—*continued*.

TABLE 460.

QUANTITY of MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore	417	28,073	245	6,237
Arsenic { crude	269	6,103	—	—
	256	14,855	751	41,448
Arsenical pyrites	20	216	—	—
Coal { Anthracite	7,996	48,776	10,250	34,289
	9,342	22,421	12,291	48,756
Copper ore	241	5,986	290	11,851
Copper precipitate	3,304	540,290	3,149	494,056
Cupreous iron pyrites	66,473	235,368	54,368	123,981
Gold	kilos. 17	11,691	kilos. 6·8	4,340
Iron ore	—	—	2,519	3,023
„ „ (manganiferous)	—	—	883	2,540
Iron pyrites	210,265	412,960	248,218	339,128
Lead ore	2,180	65,785	3,242	93,037
Manganese ore	1,652	17,242	907	2,402
Silver	kilos. 79	1,890	kilos. 119·5	2,187
Tin	1	406	—	—
Tin ore	8	1,955	102	21,554
Wolfram... ..	29	6,733	59	15,476
Total value in dollars	—	1,420,750	—	1,244,305
„ „ £ sterling	—	£218,577	—	£191,432

TABLE 461.

DEATHS from ACCIDENTS at MINES during the Years 1897 and 1898.

Year.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1897	—	—	—	—	—	—	—	—
1898	1	—	1	—	—	—	1	·26

There were seven deaths from accidents in quarries during the year 1890, giving a death-rate of 1·48 per 1,000 persons employed in that year.

ROUMANIA—continued.

There are already five important granite quarries in the Dobrudja, and the total number of quarries in the country is shown by the official statistics* to be very considerable.

For centuries the alluvia of many of the rivers have been known to carry gold, and a little of the precious metal is occasionally washed from the sands by the peasantry; but the gold resources of Roumania are as yet unknown. The same may be said of the ores of cobalt, copper, manganese, and iron, and of the beds of anthracite and coal, which have been found cropping out in various parts of the country.

TABLE 462.

OUTPUT of MINERALS during the Years 1897 and 1898.†

Mineral.	1897.		1898.	
	Metric Tons.	Value.	Metric Tons.	Value.
		Lei.		Lei.
Lignite	18,000	180,000	67,000	562,000
Petroleum	80,000	2,700,000	180,000	4,400,000
Salt	112,650	(Monopoly.)	108,079	(Monopoly.)
Stone	7,500,000	5,800,000	8,100,000	6,700,000
Total value in Lei	—	8,680,000 (a)	—	11,662 000 (a)
" " £ Sterling ...	—	£347,200	—	£466,480

(a) Excluding value of salt.

Russia.

Whether judged by the number of persons employed, or by the value of the products obtained, the workings in Russia for coal, gold, iron ore, manganese ore, petroleum, platinum, and salt, are worthy of much attention.

Coal.—The quantity of coal raised in Russia has risen very considerably of late, for the total output in 1882 was 3½ million tons, and 9½ million tons in 1896. The most productive coal region of Russia is the Donetz basin, in the province of Ekaterinoslav, which yields anthracite and bituminous coal. Next in importance comes Poland with true coal and brown coal. These two sources produce about two-thirds of the coal of Russia.

Coal and lignite have been found in many places along the line of the Trans-Siberian Railway now in course of construction.

The coal of Saghalien is being worked on a large scale, and is used for steamships.

Copper.—Most of the copper of Russia comes from the Urals and the Caucasus.

* *Statistica Carierelor din țara*, 1897; Bucharest, 1898.

† Official Return furnished by the "Département de l'Agriculture, du Commerce, de l'Industrie et des Domaines," Bucarest.

RUSSIA—*continued.*

TABLE 464.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1896 and 1897.*

Year.				Under-ground.	Above-ground.	Total.
1896	...	...	...	82,843	156,591	239,434
1897†	...	...	...

TABLE 465.

PERSONS EMPLOYED at the PRINCIPAL KINDS of MINES and other MINERAL WORKINGS during the Years 1896 and 1897.*

Kind of Mineral worked.						Persons Employed during the Year.	
						1896.	1897.†
Coal	...	...	...	...	...	53,530	
Copper ore	...	...	...	...	...	3,263	
Gold	...	...	...	...	...	72,508	
Iron ore	...	...	...	...	...	38,210	
Manganese	...	...	...	...	...	2,562	
Naphtha	...	...	...	...	...	11,727	
Platinum	...	...	...	...	...	6,981	
Salt	...	...	...	...	...	16,338	
Silver-lead ore	...	...	...	...	...	1,915	

TABLE 466.

PERSONS EMPLOYED at GOLD MINES during the Years 1896 and 1897.*

Year.				Number of Persons Employed.				
				Urals.	West Siberia.	East Siberia.	Finland.	Total.
1896	...	...	...	33,415	8,057	30,965	71	72,508
1897†	...	...	...		

* Official return furnished by the Department of Mines, St. Petersburg.

† Figures for 1897 not yet available.

RUSSIA—continued.

TABLE 467.

QUANTITY and VALUE of MINERALS produced during the Years 1896 and 1897, and the QUANTITY only for 1898.*

Mineral.	District whence Obtained.	1896.		1897.†		1898.‡
		Quantity.	Value.	Quantity.	Value.	Quantity.
		Metric Tons.	Roubles Silver.	Metric Tons.	Metric Tons.	Roubles Silver.
Asbestos	Ural	1,275	30,000	—	—	—
Asphalt and mineral pitch ..	Syzran, Caucasus ..	18,188	332,853	—	—	—
China clay	Volyn, Chernigov ..	6,104	60,000	—	—	—
Chrome ore	Perm, Orenburg, Oufa ..	6,687	40,790	—	—	—
Coal (Anthracite.. ..	{ Donetz, Poland, Moscow, Ural, Kutais, Turkestan, Tomsk, Kirgiz Steppe, Saghalien, Oussouyry. }	798,446	31,435,009	11,207,475	—	—
Coal		8,527,994				
Lignite		60,806				
Cobalt ore and regulus ..	Caucasus	4½	—	—	—	—
Copper	Ural, Western Siberia, Caucasus, Finland.	5,901	3,560,190	6,567	—	—
Gold	Ural, Eastern and Western Siberia, Lapland.	Kil. 37,240	42,073,942	Kil. 38,129	—	—
Pig iron	Ural, Central Russia, Poland, Southern Russia, Northern Russia, Siberia, Finland.	1,623,142	62,178,700	1,868,564	—	—
Wrought iron	Ditto ditto ..	498,453	—	—	—	—
Steel	Ditto ditto ..	1,023,118	—	—	—	—
Iron pyrites	Ural, Toula, Novgorod ..	13,200	80,500	—	—	—
Lead	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Turkestan.	261	30,000	—	—	—
Manganese ore	Kutais, Ural, Ekaterinoslav	208,197	1,184,323	368,808	—	—
Petroleum	Caucasus, Transcaspian, Turkestan.	7,066,232	33,621,136	7,555,582	—	—
Phosphorite	Bessarabia, Kostroma, Podolia, Smolensk.	3,780	23,000	—	—	—
Platinum	Ural	Kil. 4,934	2,408,000	Kil. 5,806	—	—
Quicksilver	Ekaterinoslav	492	1,050,000	616½	—	—
Salt { Rock salt	{ Astrakhan, Perm, Ekaterinoslav, Crimea, Kharkov, Orenburg, Tomsk, Caucasus, &c. }	340,421	7,565,000	1,526,622	—	—
Lake salt		652,433				
Salt from brine		354,498				
Silver	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Finland.	Kil. 7,819	568,000	—	—	—
Sulphate of sodium	Tiflis, Kuban, Tomsk, Volodga.	5,415	28,600	—	—	—
Sulphur	Daghestan, Poland, Turkestan	437	14,000	—	—	—
Tin	Finland	2	1,190	—	—	—
Zinc	Poland	6,281	1,145,000	5,879	—	—
Total value in roubles ..		—	187,420,233	—	—	—
" " £ sterling ..		—	£29,749,243	—	—	—

TABLE 468.

QUANTITY of IRON ORE produced in each District in 1896 and 1897.*

Region.	1896.		1897.‡	
	Number of Mines.	Quantity produced.	Number of Mines.	Quantity produced.
		Metric Tons.		Metric Tons.
Urals	651	1,346,273	—	—
Central Russia	78	173,142	—	—
South Russia	40	1,258,797	—	—
Poland	109	296,482	—	—
Siberia	10	27,594	—	—
North Russia	7 and 22 lakes	22,903	—	—
Finland	2 „ 129 „	75,631	—	—
Caucasus	4	5,179	—	—
Total	901 and 151 lakes	3,206,001	—	—

* Official returns furnished by the Department of Mines, St. Petersburg.

† Preliminary data subject to revision.

‡ Figures for 1898 not yet available.

§ " " 1897 " "

RUSSIA—*continued*.

TABLE 469.

DEATHS from ACCIDENTS at the MINES and other WORKINGS for MINERALS
during the Years 1895 and 1896.*

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1895 	233	0·96
	1896 		

Sandwich Islands.†

The mineral industries of the Sandwich Islands are of slight importance. There are large deposits of gypsum, and red and yellow ochre ; sulphur is found around the volcanoes.

The extraction of salt from sea water is carried on to supply local wants.

Saxony. (*See* GERMAN EMPIRE.)

St. Martin. (*See* DUTCH WEST INDIES.)

Senegal.‡

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives. In 1898, 129 kilograms of gold valued at £15,464 were exported.

Servia.§

Servia is richly endowed with mineral wealth, but until new railways have been constructed and the existing cart roads improved|| it is idle to expect that it will become a great mining country.

Coal.—Most of the coal region lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are in the neighbourhood of Posarevatz.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley near Tschuka.¶

Gold.—Gold was worked in Servia by the Romans, and a little gold mining is carried on at the present day.

* Official return furnished by the Department of Mines, St. Petersburg. Figures for 1896 not yet available.

† Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines," *Eng. Mag.* Vol. XVII., 1899, p. 242.

‡ Consul Arthur, "Trade of Senegal and Dependencies for the year 1898," *Dipl. and Cons. Reports*, No. 2372, Ann. Ser. 1900 [Cd. 1-9], and *Min. Jour.*, Vol. LXVIII., 1898, p. 221.

§ Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce, and Industry, Belgrade.

|| Consul Macdonald "Trade of Servia for the years 1897-98," *Dipl. and Cons. Reports*, No. 2207, Ann. Ser. 1899 [C. 9044-33].

¶ *Berg- und huettenwaennische Zeitung*, Vol. LV., 1896, p. 299.

Siam.*

Siam produces gems, gold, and tin ore. The gems, rubies and sapphires, are obtained from shallow diggings on the flanks of the Patat range in the Cambodian peninsula. The gem pits afford employment to five or six thousand Shans and Laos, and the value of the output is estimated to be about £300,000 annually. Alluvial gold exists and has been worked in many parts of Siam, notably near Lophburi; reef-mining has been carried on at Kabin and Wattana, and the former mine is already producing 200 ozs.† a month. A larger output will soon be forthcoming when the new crushing machinery has been erected.

The tin mines of the State are chiefly situated in the Siamese Malay Provinces, along the edge of the granites of the main ridge which forms the watershed of the Peninsula. The total annual output of metallic tin may be estimated at about 4,000 tons, giving employment to over 15,000 persons, mostly Chinese. The royalty on tin has now been reduced to 10 per cent. of the output, and this will enable a certain number of mines, which would not pay under the old royalty, to be re-worked.

Singkep. (See DUTCH EAST INDIES.)

Somaliland.‡

—This country is said to possess workable deposits of the precious metals.

Soudan. (See EGYPT.)

South African Republic.§

The South African Republic is now the greatest gold-producing country of the world, and its mineral resources are by no means confined to the precious metal; it is also yielding coal, diamonds, silver-lead ore, and tin ore; whilst the ores of antimony, cobalt, copper, mercury, and zinc are known to exist.

Coal is worked chiefly in the Boksburg district, and the output is increasing gradually.|| There are also good indications of coal in Swaziland.¶

Diamonds.—There are alluvial diggings close to Christiana, and a "pipe" of "blue ground" similar to that of Kimberley has been discovered at Rietfontein, near Pretoria. The number of persons engaged in searching for diamonds is rapidly increasing.

* M.S. communication from H. Warrington Smyth, and Bel, "Aperçu sur les gîtes minéraux de l'Indo-Chine Centrale." *Bull. Soc. Ind. Min.*, Vol. XII., 1898, p. 384.

† Vice-Consul Black, "Trade of Bangkok and District for the year 1897." *Dipl. and Cons. Reports*, No. 2,190, Ann. Ser., 1898 [C. 9044-16], and Consular-Assistant Carlisle, "Ibid. for 1898" [C. 9496-24].

‡ *Manchester Guardian*, 14 September 1899.

§ *Rapport van het Hoofd van Mijnwerzen over het Jaar, 1898*, Pretoria, 1899; and translation: *Report for the year ending 31st December 1898, as presented by the State Mining Engineer to the Government of the South African Republic*, Pretoria, 1899.

|| Peile, "Transvaal Coalfield." *Trans. Inst. M.E.*, Vol. XVI., 1898, p. 20, with a map.

¶ Consul Smuts, "Report for the year 1896 on the Trade, &c., of Swaziland." *Dipl. and Cons. Reports*, No. 1,996, Ann. Ser., 1897 [C. 8648-18].

SOUTH AFRICAN REPUBLIC—*continued.*

TABLE 475.

PERSONS EMPLOYED at COAL MINES in 1897 and 1898.

Year.	Under-ground.		Above-ground.		Total Under and Above-ground.	
	Whites.	Natives.	Whites.	Natives.	Whites.	Natives.
1897	159	3,917	313	2,744	472	6,661
1898	121	4,212	270	2,689	391	6,901

TABLE 476.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
Coal	Metric Tons. 1,625,892	£ 612,668	Metric Tons. 1,938,424	£ 668,346
Diamonds	carats 5,792	11,500	carats 22,843	43,730
Gold	kilos. 85,488 ozs. 2,748,520*	11,653,725	kilos. 119,136 ozs. 3,830,337*	16,240,630
Silver-lead ore	254	Not given.	81	500
Tin ore	70	2,760	23	1,800
Total value	—	12,280,653	—	16,955,006

About two-thirds of the total value of the gold were obtained from the stamp mills, and one-third by chemical means, such as the cyanide, chlorination, and other processes. The cyanide process was applied not only to tailings and concentrates, but also to 131,186 tons of ore pulverised and treated directly.

TABLE 477.

QUANTITY and VALUE of FINE GOLD produced during the Years 1897 and 1898.

How obtained.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
Free gold in milling	Ozs. 1,807,025	Kilos. 56,205	£ 7,661,786	Ozs. 2,515,893	Kilos. 78,253	£ 10,667,385
Chemical treatment :—						
Tailings	722,652	22,477	3,064,044	1,039,832	32,342	4,408,889
Concentrates	118,069	3,672	500,612	149,971	4,665	635,877
Slimes	(a)	—	—	72,855	2,266	308,908
Dry process	29,168	907	123,673	31,533	981	133,701
Miscellaneous	70,995	2,208	301,018	19,109	594	81,023
From alluvial deposits	611	19	2,592	1,144	35	4,847
Total	2,748,520*	85,488	11,653,725	3,830,337*	119,136	16,240,630

(a) Included with miscellaneous.

* Quantity estimated from the value, taking 1 oz. of fine gold as worth 84·8s.

SOUTH AFRICAN REPUBLIC—*continued.*

TABLE 480.

DEATHS from ACCIDENTS at all the GOLD MINES, classified according to CAUSE of ACCIDENT, during the Years 1897 and 1898.

Cause of Accident.	1897.			1898.		
	Persons Killed.			Persons Killed.		
	White.	Native.	Total Number of Deaths.	White.	Native.	Total Number of Deaths.
Ascent or descent in cages or skips ...	12	62	74	13	58	71
" " by ladders ...	—	4	4	—	6	6
Boilers ...	—	—	—	—	5	5
Explosives ...	11	42	53	18	69	87
Falling in shafts ...	6	30	36	8	69	77
Falling materials, &c. (in shafts, &c.)...	2	4	6	3	15	18
Falls of rock (in stopes, &c.) ...	—	61	61	7	75	82
Machinery ...	4	20	24	4	22	26
Suffocation by gases ...	9	48	57	2	3	5
Trucks and tramways ...	1	13	14	1	17	18
Miscellaneous ...	1	9	10	2	7	9
Total ...	46	293	339	58	346	404

The most serious individual accident during the year 1898 happened at the Crowl Deep Mine, and involved the loss of 12 lives. It was caused by the draw-bolt breaking and the cage falling to the bottom of the shaft, a depth of 1,000 feet.

Spain.*

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrite than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality, and it has lately become an important supplier of manganese ores.

In spite of its wonderful resources, the total number of persons employed in and about mines in Spain is only 75,000.

Coal.—The coal industry of Spain is growing; most of the coal comes from the province of Asturias.

Copper.—The Rio Tinto mines and its neighbours show no signs of impoverishment, for the output of the province of Huelva was 2,229,595 tons. Compared with this figure the production of the other copper-bearing provinces, such as Seville, Murcia, Almeria, Oviedo, &c., is small.

Gold.—Mines are being successfully worked in the province of Corunna.†

Iron Ore.—As had been foreseen, the output of iron ore shows a decided decrease; this is owing to the falling off of the Bilbao mines which yield about 70 per cent. of the total output of the kingdom. Other sources of supply are being requisitioned to make up for the deficiency of the province of Biscay, and Santander already has an output of nearly 800,000 tons.

Lead.—Most of the lead comes from the provinces of Jaen and Murcia; much of the ore, and especially that of Murcia, contains a notable amount of silver.

* Consul Harrison, "Trade of Spain for the Year 1898." *Dipl. and Cons. Reports*, No. 2,245, Ann. Ser., 1899 [C. 9044-71].

† Consul Talbot, "Trade of Corunna and District for the Year 1898." *Dipl. and Cons. Reports*, No. 2,216, Ann. Ser., 1899 [C. 9044-42].

SPAIN—continued.

TABLE 483.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.*

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Aluminous earths	409	10,232	505	12,627
Anthracite	8,758	78,725	20,105	180,950
Antimony ore	354	33,590	130	10,743
Arsenical Pyrites	—	—	230	2,875
Asphalt (rock)	1,656	16,562	2,383	23,860
Barium sulphate	429	12,245	364	10,370
Brown coal	54,232	270,133	66,422	466,548
China clay	6,294	33,585	5,445	27,592
Coal	2,010,960	17,048,179	2,414,127	20,736,665
Cobalt ore	13	17,000	—	—
Copper ore	18,488	179,612	2,973	142,440
Cupreous iron pyrites... ..	2,161,182	10,624,464	2,299,444	13,676,305
Fluor spar	2	180	5	375
Gold ore... ..	450	9,250	555	10,825
Gold and silver ore	2,006	40,116	—	—
Graphite	—	—	10	90
Iron ore	7,419,768	27,286,637	7,197,047	31,162,419
Iron pyrites	100,000	250,000	70,265	175,675
Lead ore... ..	110,469	10,293,057	150,472	24,740,278
Lead ore, argentiferous	186,692	18,675,064	244,068	40,118,859
Lead and zinc ores	40	200	38	192
Manganese ore	100,566	681,251	102,228	1,715,227
Mineral waters... ..	16,180,585	579,368	15,610,222	611,324
Ochre	200	4,000	200	4,000
Phosphorite	2,084	83,360	4,500	225,015
Quicksilver ore... ..	32,378	6,642,215	31,361	6,260,121
Salt	508,606	5,796,472	479,372	5,128,552
Silver ore	982	508,984	767	530,469
Silver ore, ferruginous	5,559	96,734	24,190	341,078
Steatite	3,601	106,704	2,613	72,518
Sulphur rock	18,845	162,938	105,757	990,688
Tin ore (undressed)	2,378	28,974	4	2,340
Topaz	kilos. 44	3,755	kilos. 399	7,268
Tungsten ore (Wolfram)	10	1,545	37	26,625
Zinc ore	73,848	1,819,230	99,836	4,956,929
Total values in Pesetas	—	101,394,361	—	152,371,842
„ „ „ £ sterling	—	£4,055,774	—	£6,094,874

TABLE 484.

DEATHS from ACCIDENTS at MINES during the Years 1897 and 1898.†

Year.	Number of Deaths by Accidents.	Number of Persons seriously Injured.	Death-rate per 1,000 Persons Employed.
1897	142	258	2.15
1898	214	274	2.84

* *Estadística Minera de España al año 1897 and ibid. 1898*, Madrid, p. 24.† *Ibid.*, pp. 26 and 27.

SWEDEN—continued.

Iron ore.—Sweden, which has long been famous as an iron-producing country, is likely to furnish important supplies of ore to this country in the near future, when the vast deposits in the province of Norrbotten, within the Arctic Circle, are rendered available for export at all seasons of the year by railway communication with the west coast of Norway. The Gellivare mines, which are connected by rail with the port of Luleå on the Gulf of Bothnia, furnished 859,000 * tons in 1898, or more than one-third of the total output of iron ore in Sweden. Still further north lie the deposits of Kiirunavaara and Luossavaara, which, according to Lundbohm † “are the largest individual deposits of the kind in Scandinavia, while in all Europe and America their rivals in size are few in number; they consist principally of magnetite, and the remaining part is also magnetic, though here mixed with hæmatite.”

Lundbohm's useful little map shows the course of the proposed railway from Gellivare, to Kiirunavaara, Luossavaara, and Victoria-harbour on the Ofoten-fjord, in latitude 68° 30' N.

It is expected that the railway will be opened in 1903.*

Peat.—The table of production takes no account of either the peat diggings or of the stone quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould.

Stone.—Granite, using the word in its commercial sense, is quarried on the west coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden.

Portland cement is manufactured in several places, and the total annual production is about 335,000 casks.

Zinc.—The Ämmeberg mines supply most of the zinc ore, which is exclusively blende.

TABLE 486.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1897 and 1898.

Year.	Kind of Workings.	Under-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1897	Coal mines	1,127	86	1,213	384	32	416	1,629
„	Iron „	3,484	136	3,620	4,232	945	5,177	8,797
„	Other „	926	3	929	667	401	1,068	1,997
„	Feldspar quarries ...	95	1	96	81	81	162	258
	Total for 1897 ...	5,632	226	5,858	5,364	1,459	6,823	12,681
1898	Coal mines	1,185	86	1,271	357	35	392	1,663
„	Iron „	3,869	103	3,972	4,216	1,086	5,302	9,274
„	Other „	1,060	5	1,065	790	431	1,221	2,286
„	Feldspar quarries ...	70	1	71	136	97	233	304
	Total for 1898 ...	6,184	195	6,379	5,499	1,649	7,148	13,527

* Consul MacGregor, “Trade of Stockholm and the Eastern Coast of Sweden for the year 1898.” *Dipl. and Cons. Reports*, No. 2,317, Ann. Ser., 1899 [C. 9044-143].

† *The iron-ore fields at Kiirunavaara and Luossavaara in the Province of Norrbotten, Stockholm, 1898.*

SWITZERLAND—*continued.*

Anthracite.—Two mines, Chandolin and Granges, produce annually 1,500 to 2,000 tons of anthracite containing a high percentage of ash.

Bituminous limestone.—The asphalt rock of the Val de Travers, which is exported from Switzerland to various countries, is a bituminous limestone of Cretaceous age. The bed is 4 to 8 m. thick, and contains about 10 per cent. of bitumen.

Brown coal and cement.—With reference to the Swiss brown coal, which is of Miocene age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure.

Iron.—The largest workings for iron are at Delsberg, a mine which employs 136 workmen.

*Salt.**—Switzerland possesses five workings for salt, viz., Bex salt mine in the Rhone valley; the brine wells of Rheinfelden, Ryburg, and Kaiseraugst in the Canton Aargau; and the brine well Schweizerhalle in the Canton Baselland. The annual output now approaches 50,000 tons.

TABLE 489.

NUMBER of PERSONS EMPLOYED at MINES and UNDERGROUND QUARRIES during the Year 1896-1897.

	Kind of Workings.	Number of Works.	Number of Persons Employed.
	Mines	20	459
	Underground quarries	107	1,405
	Total	127	1,864

TABLE 490.

QUANTITY of MINERALS produced during the Years 1896 and 1897.

Mineral.	Year.	
	1896.	1897.†
	Metric Tons.	Metric Tons.
Anthracite	—	
Bituminous limestone	25,000	
Brown coal	—	
Cement (Portland)	132,730	
„ (Roman)	15,320	
Cobalt and nickel ore... ..	—	
Fireclay	—	
Gold ore	—	
Graphite	—	

* *Statistisches Jahrbuch der Schweiz*; Bern, Vol. VII., 1898, p. 106.

† Figures not yet available.

SWITZERLAND—*continued.*TABLE 490—*continued.*

Mineral.	Year.	
	1896.	1897.†
	Metric Tons.	Metric Tons.
Gypsum	51,507	
Iron ore	12,000	
Lime (hydraulic)	208,528	
Magnesium sulphate	—	
Marble	—	
Marl	—	
Potstone	—	
Pozzolana	9,000	
Salt (Bex mine and brine wells)	47,292	
Sandstone	—	
Slate	—	

TABLE 491.

DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1897 and 1898.

Kind of Workings.	1897.		1898.†	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines	2	4.36		
Underground quarries	7	4.98		

Tong-King. (See INDO-CHINA.)

Tunis.*

Tunis cannot be called an important mining country at the present time.

Phosphate of lime.—This mineral is found at the base of the Eocene rocks, especially in the mountain chain running from Gafsa to Tamerza, where the beds may be followed for a distance of about 40 miles. The crude rock contains from 55 to 60 per cent. of phosphoric acid.

* *La Tunisie à l'Exposition internationale de Pêche de Bergen, Tunis, 1898.*

† Figures not yet available.

TUNIS—continued.

The phosphate mines in the neighbourhood of Gafsa have been taken up by a French company, and now that the mines have been connected with the port of Sfax by a railway 150 miles in length, it is estimated that 300,000 tons will be exported annually.*

Salt.—This mineral is obtained from salt marshes and lakes, especially at Rhadès. The salt-pans worked by the State produced in 1897 8,100 tons of salt which was sold at about 24 francs per ton, and in 1898, 7,300 tons at 22 francs per ton.

An important salt lake at La Soukhra, near Tunis, fed by salt-water from the sea and covering an area of more than 15 square miles, becomes completely dried up in summer, and leaves a deposit of salt from 2 to 6 inches in thickness. This immense source of salt has lately begun to be utilized for export purposes.

Zinc ore.—Calamine is worked in several places, and after being calcined is shipped to France and Belgium.

TABLE 492.

QUANTITY and VALUE of MINERALS produced during the Years 1897 and 1898.†

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Gypsum	12,500	—	10,800	—
Lead ore	2,123	135,000	2,375	188,400
Marble	1,000	—	600	—
Onyx	535	—	—	—
Phosphate of lime	7,300	—	—	—
Potter's clay	5,000	—	5,800	—
Salt from marshes and salt lakes	8,100	194,400	7,300	160,600
Stone (dressed for building)	355,000	—	295,000	—
„ (broken)	153,000	—	67,000	—
Zinc ore (calcined)	11,830‡	736,000	21,763§	1,081,700

Turkey.||

The mineral resources of the Ottoman Empire are great, but almost entirely undeveloped. No official statistics are published.

Alum.—A little alum is manufactured.

Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895.

Arsenic.—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly; both orpiment and realgar are mined in Macedonia.

* Consul-General Johnston, "Trade and General Progress in Tunis during the Year 1898-99." *Dipl. and Cons. Reports* No. 2,279, Ann. Ser., 1899 [C. 9044-105].

† *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1897*, p. 80, *Ibid.* 1898, p. 86

‡ Exclusive of 3,500 tons of calamine from prospecting operations.

§ 3,000

|| Helmhacker, "The Useful Minerals of Turkey." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 635.

UNITED STATES—continued.

Coal.—The total production of coal in 1898 was 199,614,035 metric tons, of which 48,441,601 tons were anthracite and 151,172,434 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

In the case of anthracite there is an increase of nearly 700,000 tons, whilst bituminous coal shows the enormous rise of more than 17 million tons; taking anthracite and bituminous coal together, there is a net increase of nearly 18 million tons.

Copper.—There are three great copper States: Arizona, Michigan, and Montana; the last furnished in 1898 more than 39 per cent. of the total output of the whole country.

Gold.—The principal gold-producing states are Colorado with a yield in 1898 of 1,222,073 ozs., and California with a product of 756,483 ozs.

Iron.—The chief iron-producing States in order of importance are Michigan, Minnesota, and Alabama. The State of Minnesota is yearly becoming of more and more importance as a producer of iron ore, especially since the development within the last few years of the resources of the Mesabi range. The open and underground workings of this region produced 5,963,509 tons of iron ore in 1898. Few, if any, districts in the world can show such a rapidly increasing output, and not only is the quantity large, but the percentage of metal is high. The analysis of 36 cargoes from various mines show percentages of iron ranging from 59 to 65.

Lead.—Colorado was for many years remarkable for its large output of lead; but with the fall in the price of silver many of its mines, which produced both metals, have been stopped. Idaho was the greatest producer in 1898, followed closely by Colorado; whilst Utah, Montana, Missouri, and Kansas are likewise large lead-producing States.

Petroleum.—The yield of the oil-wells of the United States far surpasses that of all the rest of the world put together. In 1898 the production was 55,354,233 barrels of 42 gallons.

The principal oil-producing States are Pennsylvania, West Virginia, Ohio, and Indiana.

Phosphate of lime.*—The three great phosphate States are Florida, Tennessee, and South Carolina; Florida now furnishes more of the fertilizer than the other two States put together.

Quicksilver.—California is the only State now producing quicksilver.

Silver.—Colorado, in spite of its slightly decreased production, yields more than two-fifths of the total output of silver, and Montana about one-third.

Zinc.—Zinc ore is abundant in the United States; Illinois, Indiana, Kansas, and Missouri produce seven-eighths of the total quantity obtained.

It is beyond the province of this Report to enter into minute details concerning each individual State; but a few facts relating to those in which mining is one of the important industries may with propriety be inserted from time to time.

COLORADO.

Judged by the value of its metallic output, which now exceeds eight millions sterling annually, Colorado is the most important metalliferous State in the Union. Its ore mines are regulated by a new Act † of the General Assembly, which came into force on 9th July, 1899. Section 20 contains 27 rules for working, corresponding to our General Rules, but it is curious to note the almost complete absence of regulations for ventilation. The only rule which bears upon the subject is No. 5, which is destined to prevent the pollution of the atmosphere by decaying timber stacked underground.

The danger of fires, and more especially of a fire at the shaft-top or tunnel entrance, was evidently very apparent to the framers of the Colorado Act, for no less than three of the 27 rules deal with this matter.

With the object of extinguishing fires at their outset, chemical fire-extinguishers or hand grenades must be kept in convenient places for immediate use (Rule 10) in mines where water is not available; whilst Rules 14 and 15 provide for safe exits in the case of fire destroying buildings over the entrance to the mine.

* *Eng. Min. Jour.*, Vol. LXVIII., 1899, p. 244.

† *Bulletin No 3, Bureau of Mines, State of Colorado, Denver, 1899.*

UNITED STATES—continued.

PERSONS EMPLOYED at COAL MINES in the various STATES during the Years
1897 and 1898—continued.

State.	1897.		1898.	
	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.
New Mexico	1,659	432	1,873	529
North Carolina	51	417	30	383
North Dakota	170	454	151	556
Ohio	26,410	462	26,986	538
Oregon	254	401	199	292
Pennsylvania { Anthracite	149,884	351	145,504	367
{ Bituminous	77,272	704	79,611	819
Tennessee	6,337	456	6,643	331
Texas	1,766	362	2,130	322
Utah	704	741	739	803
Virginia	2,344	652	1,855	979
Washington	2,739	524	3,145	599
West Virginia	20,504	695	21,607	773
Wyoming	3,137	828	3,475	824
Total for United States ...	397,701	503	401,221	548

TABLE 494.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES,
1897 and 1898.*

Product.	Customary Measures.	1897.			1898.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
Non-Metallic.				\$			\$
Asbestos	Short tons ..	580	528	6,450	605	549	16,300
Asphaltum	" ..	75,945	68,896	664,632	76,337	69,252	675,649
Barytes	" ..	26,042	23,625	58,295	31,306	28,400	108,339
Bauxite	Long tons ..	20,580	20,920	57,852	25,149	25,552	75,437
Borax	Pounds	18,000,000	7,258	1,080,000	16,000,000	7,258	1,120,000
Bromine	"	487,149	220	129,094	486,979	221	126,614
Building stone	—	—	—	36,070,651	—	—	36,607,264
Cement	Bls., 300 lbs. ..	10,989,463	1,495,422	8,178,283	11,968,708	1,628,675	9,781,501
Clay (brick)	—	—	—	8,000,000	—	—	9,000,000
" (all other than brick) ..	Long tons ..	—	—	1,000,000	—	—	1,000,000
Coal, anthracite†	" ..	46,974,714	47,728,545	79,301,854	47,603,075	48,427,953	75,414,537
" bituminous	Short tons ..	147,609,985	133,909,617	119,567,224	166,592,023	151,129,844	132,586,313
Cobalt oxide	Pounds	19,520	9	31,232	7,818	4	11,772
Corundum and emery	Short tons ..	2,165	1,964	106,574	4,061	3,687	275,064
Feldspar	Long tons ..	11,175	11,354	43,100	12,000	12,192	32,395
Fibrous talc	Short tons ..	57,009	51,718	396,936	54,356	49,311	411,430
Flint	Long tons ..	11,952	12,144	26,227	19,130	19,437	42,670
Fluorspar	Short tons ..	5,062	4,591	37,159	7,675	6,963	63,050
Fuller's earth	" ..	17,113	15,524	112,372	14,860	13,481	106,500
Garnet (abrasive)	" ..	2,554	2,316	80,853	2,967	2,691	86,850
Graphite .. { Crystalline	Pounds	—	—	—	2,360,000	1,071	75,200
	Amorphous	Long tons ..	1,668	1,695	54,277	890		904

* Official Return furnished by the United States Geological Survey, Washington.

† Represents production from Pennsylvania only.

UNITED STATES—continued.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1897 and 1898—continued.

Product.	Customary Measures.	1897.			1898.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Non-Metallic—cont.</i>				\$			\$
Grindstones	—	—	—	368,058	—	—	489,769
Gypsum	Short tons ..	288,982	262,161	755,864	291,638	264,570	755,280
Infusorial earth and Tripoli ..	" ..	3,833	3,477	22,835	2,733	2,479	16,691
Limestone for iron flux	Long tons ..	4,247,888	4,315,853	2,124,000	5,275,819	5,360,483	2,638,000
Magnesite	Short tons ..	1,143	1,037	13,671	1,263	1,146	19,075
Manganese ore	Long tons ..	11,108	11,286	95,505	15,957	16,213	129,185
Marls	Short tons ..	60,000	54,431	30,000	60,000	54,431	30,000
Mica	Sheet Pounds ..	—	—	—	129,520	59	103,534
	Scrap Long tons ..	777	789	95,226	3,999	4,063	27,564
Millstones	—	—	—	25,932	—	—	25,934
Mineral waters	Gallons sold ..	22,362,282	—	4,505,620	28,853,464	—	8,051,833
	Litres	101,602,089	—	—	121,963,592	—	—
Monazite	Pounds	44,000	20	1,980	250,776	114	13,542
Natural gas	—	—	—	13,826,422	—	—	14,750,000
Oilstones	—	—	—	149,970	—	—	180,738
Paints, mineral	Short tons ..	60,913	55,280	795,793	58,850	53,388	694,856
Petroleum	Bls., 42 gals. ..	60,568,081	7,691,185	40,929,611	55,354,233	7,029,109	44,183,359
	Litres	11,557,918,351	—	—	10,562,984,576	—	—
Phosphate rock	Long tons ..	1,039,345	1,056,024	2,673,202	1,308,885	1,329,889	3,453,460
Precious stones	—	—	—	130,675	—	—	160,920
Pumice stone	Short tons ..	—	—	—	600	545	13,200
Pyrites	Long tons ..	143,201	145,499	391,541	193,364	196,467	593,801
Rutile	Pounds	100	—	350	140	—	700
Salt	Bls., 280 lbs. ..	15,973,202	2,028,691	4,920,020	17,612,634	2,236,910	6,212,554
Soapstone	Short tons ..	21,923	19,888	365,639	22,231	20,167	287,112
Sulphur	" ..	2,275	2,063	45,580	1,200	1,088	32,96
Zinc, white	" ..	25,000	22,679	1,750,000	33,000	29,937	2,310,000
Total value of non-metals in \$ .. ..	.. ..	—	—	329,020,359	—	—	352,784,952
Total value of non-metals in £ sterling. .. ..	.. ..	—	—	£87,579,845	—	—	£72,589,496
<i>Metallic.</i>				\$			\$
Aluminium	Pounds	4,000,000	1,814	1,500,000	5,200,000	2,358	1,716,000
Antimony	Short tons ..	756	684	109,655	1,120	1,016	184,050
Copper	Pounds	494,078,274	224,111	54,080,189	520,512,987	238,822	61,865,276
Gold (fine)	Troy ounces ..	2,774,935	—	57,363,000	3,118,398	—	64,464,000
	Kilos.	86,310	—	—	96,963	—	—
Iron, pig	Long tons ..	9,652,080	9,807,582	95,122,209	11,773,934	11,962,877	116,557,000
Lead	Short tons ..	212,000	192,323	14,885,728	222,000	201,305	16,650,000
Nickel	Pounds	23,707	11	7,823	13,411	6	4,694
Platinum	Troy ounces ..	150	—	900	225	—	1,913
	Kilos.	5	—	—	7	—	—
Quicksilver	Flasks 76½ lbs. ..	26,648	925	993,445	31,092	1,079	1,188,627
Silver (fine)	Troy ounces ..	53,860,000	—	60,637,172	54,438,000	—	70,384,485
	Kilos.	1,675,234	—	—	1,693,212	—	—
Zinc	Short tons ..	99,980	90,700	8,498,300	115,399	104,888	10,359,910
Total value of metals in \$ .. ..	.. ..	—	—	302,188,502	—	—	343,400,955
" " " £ sterling .. ..	.. ..	—	—	£77,553,087	—	—	£70,058,633
Estimated value of products unspecified. .. ..	.. ..	—	—	\$1,000,000	—	—	\$1,000,000
Total value in \$ .. ..	.. ..	—	—	632,218,561	—	—	697,185,907
" " " £ sterling .. ..	.. ..	—	—	£129,838,264	—	—	£143,453,408

UNITED STATES—*continued.*

The following tables give further details concerning the output of coal and iron ore:—

TABLE 495.

COMPARATIVE OUTPUT for the Years 1897 and 1898 in the principal COAL-PRODUCING STATES.*

State.	1897.	1898.	Comparison with previous Year.
	Metric Tons.	Metric Tons.	Metric Tons.
Illinois	18,209,712	16,873,012	— 1,336,700
Ohio	11,339,817	12,753,334	+ 1,413,517
Pennsylvania { Anthracite ...	47,700,746	47,901,742	+ 200,996
{ Bituminous ...	49,599,699	58,284,514	+ 8,684,815
West Virginia	11,893,679	14,524,262	+ 2,630,583
Other States	42,894,509	49,220,933	+ 6,326,424
Total	181,638,162	199,557,797	+ 17,919,635

TABLE 496.

PRODUCTION of IRON ORES.†

State.	Red Hematite.	Brown Hematite.	Magnetite.	Carbonate.	Total.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
Michigan	7,307,796	—	156,949	—	7,464,745
Minnesota	6,059,209	—	—	—	6,059,209
Alabama	1,882,849	557,441	—	—	2,440,290
Other States	1,004,404	1,461,935	1,100,896	56,262	3,623,497
Total for 1898	16,254,258	2,019,376	1,257,845	56,262	19,587,741
„ 1897	14,644,617	1,993,439	1,076,481	84,632	17,799,169

TABLE 497.

DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1897 and 1898.‡

State.	1897.			1898.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Tons of Mineral raised per Life lost.
Colorado	35	4.99	101,876	24	3.23	173,918
Illinois	69	2.04	290,909	75	2.14	247,991
Indiana	16	2.00	264,255	22	2.45	—
Indian Territory	22§	6.34	60,672	17||	5.29	85,770
Iowa	21§	1.81	180,940	26||	2.46	169,143
Kansas	6	0.71	612,032	6	0.83	—
Kentucky	12	1.55	275,338	6	0.79	590,355
Maryland	5	1.17	882,386	4	0.83	—
Missouri	8	1.22	303,673	9	1.38	—
New Mexico	7	5.13	104,791	7	3.74	—
Ohio	40	1.51	304,923	54	1.84	270,463
Pennsylvania { Anthracite ...	424	2.84	110,725	411	2.89	114,708
{ Bituminous ...	149	1.72	366,941	198	2.25	323,483
Tennessee	10	1.58	288,885	20	2.56	162,499
Utah	3	4.26	173,853	3	4.17	194,030
Washington	7	2.56	204,873	9	2.86	—
West Virginia	62	2.89	186,643	90	4.17	—

* Compiled from the Reports of the various States.

† Return furnished by the United States Geological Survey, Washington.

‡ Compiled from the Reports of Inspectors of Mines for the various States, *The Mineral Industry*, Vol. VI., 1897, by R. P. Rothwell, New York and London, 1898, pp. 722-735, and *Eng. Min. Jour.*, Vol. LXIX, 1900, p. 110.

§ For Fiscal Year ended June 1897.

|| " " " " " 1898.

INDEX

A.		Page.
AUERDEN, Granite ...	...	142, 190
" Gravel and sand ...	...	142, 191
" Igneous rocks other than granite ...	...	142, 194
" Limestone ...	...	143, 230
" Sandstone ...	...	143, 244
" Slate ...	...	143, 248
" Persons employed at Quarries ...	...	64, 143
Abyssinia, Minerals ...	...	327
Accidents, Fatal, at Mines in the United Kingdom	22-25,	66-87
" " Mines under the Coal Mines	Act ...	9, 22, 23, 40, 42
" " Mines under the Metalliferous	Mines Act ...	9, 24, 25, 41, 43
" " Quarries under the Quarries	Act ...	9, 26, 27, 88-97
" " in the several Coal-fields ...	...	83-86
" " at Coal Mines ...	...	69
" " Boiler explosions ...	22, 23, 82, 85, 86	
" " Descent or ascent ...	22, 23, 76, 85, 86	
" " Explosions of Fire-damp or Coal-	dust ...	22, 23, 40, 41, 70-73, 85, 86
" " Explosives ...	22-25, 78, 79, 85, 86	
" " Falls of ground ...	22-25, 40, 41, 70, 73-75,	85, 86
" " Haulage... ...	22, 23, 78, 80, 81, 85, 86	
" " Inclined or engine-planes ...	22, 23, 78, 85, 86	
" " in the several Inspection districts	22-25	
" " at Iron Mines ...	...	69
" " Irruptions of water ...	22, 23, 78, 80, 85, 86	
" " Miscellaneous underground	22-25, 77-81,	85, 86
" " " on surface ...	22-25, 82	
" " Machinery ...	22-25, 78, 85, 86	
" " at "other Mines" than Coal and Iron	69	
" " Railways, sidings, &c... ..	22-25, 82, 85, 86	
" " Ropes and chains breaking	22-25, 76, 78,	85, 86
" " Shafts ...	22-25, 40, 41, 70, 75-77, 85, 86	
" " Shot-firing ...	...	78, 79
" " Suffocation by natural gases...	22, 23, 78,	80, 85, 86
" " Surface ...	22-25, 40, 41, 70, 81-83, 85, 86	
" " Trams and tubs ...	22, 23, 78, 85, 86	
" " Underground fires ...	22, 23, 78, 80, 85, 86	
" " " haulage ...	22-23, 78, 80, 81	
" " Ayr Colliery ...	...	72
" " Drumpeller Colliery ...	...	72
" " Montgomeriefield Colliery ...	...	76
" " Whitwick Colliery ...	...	66
" " at Mines in :-		
" " Algeria ...	...	278, 329
" " Austria ...	...	278, 334-336
" " Belgium ...	...	278, 343
" " Bohemia ...	...	278, 337
" " Bo-nia and Herzegovina ...	...	278, 339
" " British Columbia... ..	278, 291, 292	
" " British Guiana ...	...	278, 286
" " Cape Colony (Kimberley Dia-	mond Mines) ...	278, 296-298
" " Ceylon ...	...	278, 299
" " Federated Malay States...	...	278, 302
" " France ...	...	278, 356, 357
" " German Empire ...	...	278, 363, 364
" " Gold Coast ...	...	278, 303
" " Greece ...	...	278, 373
" " Hungary ...	...	278, 338
" " India ...	...	278, 309, 310
" " Italy ...	...	278, 378
" " Japan ...	...	278, 3-0
" " Kimberley... ..	278, 296-298	
" " Mexico ...	...	278, 382
" " Natal ...	...	278, 311
" " New South Wales	278, 314, 315	

Accidents, Fatal, at Mines in—cont.		Page.
" " New Zealand ...	...	278, 317
" " Nova Scotia ...	...	278, 293
" " Ontario ...	...	278, 294
" " Portugal ...	...	278, 388
" " Prussia ...	...	367-369
" " Queensland ...	...	278, 319
" " Russia ...	...	278, 394
" " Saxony ...	...	371
" " Servia ...	...	278, 395
" " South African Republic	278, 399, 400	
" " South Australia ...	...	278, 321
" " Spain ...	...	278, 402, 403
" " Sweden ...	...	278, 405
" " Switzerland ...	...	278, 407
" " Tasmania ...	...	278, 322
" " United States ...	...	278, 414
" " Victoria ...	...	278, 324
" " Western Australia ...	...	278, 326
" " at Cherra Coal Mine (India)	...	309
" " at Ver. Carolinenglück, Zollern,	Cons. Paulus Hohenzollern and	
" " General Blumenthal Collieries	(Prussia) ...	368
" " at Quarries in United Kingdom	9, 26, 27,	88-97
" " from Blasting ...	26, 27, 89, 91-93	
" " at different kinds of Quarries	...	88, 89
" " during descent and ascent	26, 27, 90, 93	
" " Explosives ...	26, 27, 89, 92, 93	
" " Factories and Workshops connected	with Quarries ...	26, 27, 90, 94
" " Falls of ground ...	26, 27, 89, 91, 92	
" " in the several Inspection districts	26, 27	
" " Miscellaneous, inside and outside	26, 27,	89-91, 93, 94
" " Railways, tramways, &c.	26, 27, 90, 93, 96	
" " to the Public at Quarries ...	...	97
" " at Petroleum Workings :-		
" " Austria ...	...	278, 336
" " at Quarries :-		
" " Algeria ...	...	278, 329
" " Belgium ...	...	278, 343
" " British Guiana ...	...	278, 286
" " Ceylon ...	...	278, 299
" " France ...	...	278, 357
" " Holland ...	...	278, 374
" " Italy ...	...	278, 379
" " Switzerland ...	...	278, 406
" " at Gold Dredging Works in New	Zealand ...	317
" " Non-fatal at Mines ...	...	28-31
" " Quarries ...	...	32, 33
Actinolite, Output of Canada ...	...	289
Acts of Parliament relating to Mines and Quarries	...	6
Algeria, Accidents ...	...	278, 329
" Mineral output ...	...	277, 328
" Persons employed ...	...	276, 327
Alum, Output of :		
" France ...	...	355
" German Empire... ..	...	361
" India ...	...	305, 308
" Prussia ...	...	367
" Sweden ...	...	405
Alum clay, Output of United Kingdom ...	10, 38, 121, 282	
Alumina, Production of United Kingdom	...	146
Aluminium, Makers in United Kingdom	...	146
" Output of United Kingdom	121, 146, 283	
" " United States	...	413
" sulphate, Output of German Empire	...	361
" " Prussia	...	367
Aluminous earths, Output of France	...	356
" " Spain	...	402
" hematite, Production of Ireland	...	201
Alum shale, Output of United Kingdom	10, 38, 121, 146,	147, 282
" " Austria ...	...	332
" " Hungary ...	...	338
" stone, Output of Italy	...	378
Alunite, Output of New South Wales	...	314
Amber, Output of India	...	305, 307
Ammonite, Accidents with...	...	78, 93
Amvis, Accidents with	...	78
Anglesey, Clay	...	142, 156
" Copper ore and precipitate	...	143, 179, 180

	Page.		Page.
Chalk, Output of.—		Coal, Output of—cont.	
United Kingdom	10, 38, 121, 144, 154, 282	Mexico	277, 1
Belgium	342	Natal	277, 1
Denmark	349	Newfoundland	277, 1
France	356	New South Wales	277, 1
Chalk Quarries, Fatal accidents	88, 89, 97	New Zealand	277, 1
Persons employed	62	Nova Scotia	277, 1
Channel Islands, Persons employed	276, 299	Ohio	277, 1
Quantity of Stone exported	299	Pennsylvania	277, 1
Chert and flint, Output of United Kingdom	10, 38, 121, 144, 155, 282	Peru	277, 1
Cheshire, Clay	140, 156	Portugal	277, 1
Coal	140, 160, 164	Prussia	277, 1
Gravel and sand	140, 190	Queensland	277, 1
Limestone	141, 229	Roumania	277, 1
Salt	141, 241	Russia	277, 1
Sandstone	141, 244	Saxony	277, 1
Persons employed	55, 60, 63, 141	Serbia	277, 1
Coal conveyed by rail	168, 169	South African Republic	277, 1
Copper Smelters	186	Spain	277, 1
Lead Smelters	227	Sumatra	277, 1
Zinc Smelters	265	Sweden	277, 1
Chili, Mineral output	277, 347	Tasmania	277, 1
Persons employed	276, 346	Tong-King	277, 1
China, Mineral wealth	347, 348	Turkey	277, 1
China clay and stone conveyed by rail and sea	157	United States	277, 412, 2
Output of Cornwall and Devon	19, 156	Victoria	277, 1
" " France	356	West Virginia	277, 1
" " Russia	393	Output per person employed	163
" " Spain	402	" exported from United Kingdom	165, 176
Chrome iron, Production in United Kingdom	205	" imported into	165
Chromic iron ore, Output of :		" Average price in the several Coal-fields	160, 161
Bosnia and Herzegovina	339	" " in the several Counties	160, 161
Canada	289	" " in the London market	160
Greece	372	" " at the Pit's mouth	160
New Caledonia	383	" " at the several Ports	160
Newfoundland	312	" Quantity retained for home consumption	160
New South Wales	314	" " per head of population	160
Norway	384	" shipped coastwise	173
Quebec	294	" " for use of steamers	168
Russia	393	" conveyed by railway, canal, &c.	168
Turkey	409	" used in the blast furnaces of United Kingdom	206
Clackmannan, Clay	142, 156	Coal-fields of United Kingdom, List of	83
Coal	142, 161, 164	Fatal accidents	83
Igneous rocks other than granite	142, 194	Mineral output	162, 1
Sandstone	143, 244	Persons employed	53
Persons employed	55, 64, 143	Coal-dust (see Accidents).	
Clare Co., Gravel and sand	144, 192	Coal mines, definition	162
Sandstone	145, 245	Fatal accidents	162
Persons employed	64, 145	Mineral output from	162
Clay, Output of United Kingdom 10, 38, 121, 144, 156, 157, 282		Persons employed at	162
Production of :		Regulation Act	162
Algeria	328	Cobalt and Nickel ores, Output of :	
Belgium	342	United Kingdom	165
Chili	347	Chili	165
France	356	German Empire	165
India	305-308	Hungary	165
Spain	402	Italy	165
United States	412	New Caledonia	165
Victoria	324	Norway	165
Exports from United Kingdom	158, 159	Prussia	165
Quarries, Fatal accidents	88, 89, 97	Russia	165
Persons employed	62	Saxony	165
Cleveland iron ore, Output of	196	Spain	165
Coal, Output of United Kingdom 10, 38, 121, 144, 165, 277, 282		Sweden	165
" " in each Coal-field	162, 163	United States	165
" " County 124, 126, 134, 140, 142, 144, 160, 161, 164		Cochin China, Output of jet	165
Output of :		Coke exported from United Kingdom	165
Algeria	277, 328	" shipped coastwise	165
Annam	374	Output of :	
Austria	277, 332	British Columbia	165
Bavaria	365	Canada	165
Belgium	277, 341, 342	New South Wales	165
Borneo, Dutch	351	New Zealand	165
Bosnia and Herzegovina	277, 339	Nova Scotia	165
Brazil	277, 345	Colombia, Mineral output	277
British Columbia	277, 291	Colorado, Accidents	411
British Borneo	277, 286, 287	Persons employed	410
Bulgaria	277, 346	Mining legislation	410
Canada	277, 289	Comparative tables, 1873-1898, Persons employed, Mineral output, Deaths from Accidents and Death Rates	3
Cape Colony	277, 295	Conglomerate, output of Belgium	182
Chili	277, 347	Congo Free State	182
Dutch East Indies	277, 351, 352	Copper exported	185
France	277, 355	" imported	185
German Empire	277, 360, 362	" obtained from British ores	121, 179
Greece	277, 372	" " Foreign ores	181
Holland	277, 374	" Price in the London market	181
Hungary	338	" Smelters in United Kingdom	186
Illinois	414	Copper or Copper ore, Output of :	
India	277, 305-308	United Kingdom 10, 38, 121, 179-181, 277, 282	
Italy	277, 377	Argentine Republic	277
Japan	277, 380	Austria	277
Java	351	Bolivia	277

	Page.		Page.
Death-rates from accidents at Mines—cont.		Diamonds, Output of :	
Nova Scotia	279, 293	Borneo, Dutch	351
Ontario	279, 294	Brazil	345
Portugal	279, 388	Cape Colony	295
Prussia	367-369	India	305, 308
Queensland	279, 319	New South Wales	314
Russia	279, 394	Orange Free State	384
Saxony ... ..	... 371	South African Republic	398
Servia	279, 395	Diseases of miners in Belgium	274
South African Republic	279, 399	District statistics of persons employed, Output and	
South Australia	279, 321	accidents	6-43
Spain	279, 402, 403	Districts, Mines inspection, List of	44, 45
Sweden	279, 405	Donegal Co., Bog ore	145
Switzerland	279, 407	Granite	144, 190
Tasmania	279, 322	Ignéous rocks other than granite	144, 194
United States	279, 414	Limestone	145, 230
Victoria	279, 324	Sandstone	145, 245
Western Australia	279, 326	Persons employed	61, 65, 145
from accidents at Petroleum Wells :		Dorsetshire, Chalk	140, 154
Austria	279, 334	Clay	140, 156
from accidents at Quarries :		Gravel and sand	140, 190
United Kingdom	34, 279, 283	Limestone	141, 229
Algeria	279, 329	Sandstone	141, 244
Belgium	279, 343	Persons employed	60, 63, 141
British Guiana	278, 279, 286	Down Co., Granite	144, 190
Ceylon	279, 299	Gravel and sand	144, 192
France	279, 357	Ignéous rocks other than granite	144, 194
Holland	279, 374	Limestone	145, 230
Italy	279, 379	Sandstone	145, 245
Switzerland	279, 407	Persons employed	61, 65, 145
Denmark, Mineral output	349, 350	Drumpeller Colliery, Explosion	72
Denbighshire, Clay	142, 156	Dublin Co., Clay	144, 157
Coal	142, 161, 164	Granite	144, 190
Gravel and sand	142, 191	Gravel and sand	144, 192
Ignéous rocks other than granite	142, 193	Limestone	145, 230
Lead ore	143, 218, 221	Sandstone	145, 245
Limestone	143, 229	Lead smelters	228
Sandstone	143, 244	Persons employed	65, 145
Slate	143, 248, 249	Dublin, Wicklow, and Wexford Railway Coal and Coke	
Zinc ore	143, 260, 262	traffic	170
Blast furnaces	204, 210	Dumbarton, Clay	142, 156
Persons employed	55, 61, 64, 143	Coal	142, 161, 164
Zinc smelters	265	Gravel and sand	142, 191
Derbyshire, Barytes	140, 151	Ignéous rocks other than granite	142, 194
Chert and flint	140, 155	Iron ore	142, 197, 198
Clay	140, 156	Limestone	143, 230
Coal	140, 160, 164	Sandstone	143, 244
Fluorspar	141, 188	Persons employed	55, 61, 64, 143
Gravel and sand	140, 190	Dumfries, Clay	142, 156
Gypsum	140, 192	Coal	142, 161, 164
Iron ore	140, 197, 198, 201	Lead ore	143, 218, 221
Iron pyrites	140, 214	Limestone	143, 230
Lead ore	141, 218, 219, 222	Sandstone	143, 244
Limestone	141, 229	Zinc ore	143, 260, 262
Manganese ore	141, 231	Lead smelters	228
Ochre	141, 233, 234	Persons employed	55, 61, 64, 143
Sandstone	141, 244	Dundalk, Newry, and Greenore Railway Coal and Coke	
Zinc ore	141, 260, 261	traffic	170
Blast furnaces	204, 206	Durham, Barytes	140, 151, 152
Coal conveyed by rail	168, 169	Clay	140, 156
Lead smelters	227	Coal	140, 160, 164
Persons employed	55, 60, 63, 141	Fluor spar	140, 188
Desilverizers in the United Kingdom	227, 228	Gravel and sand	140, 190
Detonators, Accidents with	78, 93	Ignéous rocks other than granite	140, 193
Devonshire, Arsenic	141, 148	Iron ore	140, 197, 199, 200
Arsenical pyrites	141, 150	Lead ore	141, 218, 219
Barytes	140, 151	Limestone	141, 229
Chalk	140, 154	Salt	141, 241
Chert and flint	140, 155	Sandstone	141, 244
Clay	140, 156	Zinc ore	141, 260, 261
Copper ore	141, 179, 180	Blast furnaces	204, 206
Granite	140, 190	Coal conveyed by rail	168, 169
Gravel and sand	140, 191	Copper smelters	187
Ignéous rocks other than granite	140, 193	Lead smelters	227
Iron ore	140, 197, 199, 200	Persons employed	55, 57, 60, 63, 141
Limestone	141, 229	Dutch East Indies, Mineral output	277, 350, 352
Ochre	141, 233, 234	Persons employed	276, 350, 352
Sandstone	141, 244	Guiana, Output of Gold	277, 352
Slate	141, 248	West Indies, Mineral output	277, 352
Tin ore	141, 254, 255	Dynamite, Accidents	78, 93
Arsenic refiners	150		
Persons employed	57, 60, 63, 141		
Diagram, Mining Accident Death-rates, 1873-1898	66, 67		
Deaths from different causes of Accident	70		
Death-rates from Accidents from falls of			
ground, 1873-1898	75		
Death-rates from Accidents in shafts, 1873-1898	77		
Death-rates from Miscellaneous underground			
Accidents, 1873-1898	81		
Output and Export of Coal, 1873-1898	159		
Output of Iron ore, 1873-1898	196		
Prices of Coal, Copper, Iron, Lead, Tin, and			
Zinc, 1873-1898	267		

E.

ECUADOR, Output of Gold and Silver	277, 353
Edinburghshire, Clay	142, 156
Coal	142, 161, 164
Gravel and sand	142, 191

	Page.
Java, Mineral output	351
Jet, Output of :	
United Kingdom	10, 121, 217, 282
Cochin China	375
Johore, Mineral deposits	380

K.

KAINITE, Output of :	
German Empire... ..	360
Prussia	366
Kansas, Accidents at Coal Mines	414
Persons employed	411
Kauri gum, Production of New Zealand	316
Kent, Chalk	140, 154
" Chert and flint	140, 155
" Clay	140, 156
" Gravel and sand	140, 190
" Limestone	141, 229
" Sandstone	141, 244
" Persons employed	55, 60, 63, 141
Kentucky, Accidents at Coal Mines	414
Persons employed	411
Kerry Co., Limestone	145, 230
Persons employed	65, 145
Kildare Co., Limestone	145, 230
Persons employed	65, 145
Kilkenny Co., Coal	144, 161, 164
" Limestone	145, 230
" Sandstone	145, 245
" Slate	145, 248
" Persons employed	56, 65, 145
Kimberley Diamond Mines, Accidents at	296-298
" Output of	296
" Persons employed at	296
Kincardine, Granite... ..	142, 190
Sandstone	143, 245
Persons employed	64, 143
King's County, Bog ore	145
Gravel and sand	144, 192
Limestone	145, 230
Persons employed	65, 145
Kinross, Clay	142, 156
Coal	142, 161, 164
Igneous rocks other than granite	142, 194
Persons employed	55, 64, 143
Kirkcubright, Granite	142, 190
Igneous rocks other than granite	142, 194
Persons employed	61, 64, 143

L.

LABUAN, Output of coal	286
Lanarkshire, Clay	142, 156
Coal	142, 161, 164
Gravel and sand	142, 191
Igneous rocks other than granite... ..	142, 194
Iron ore	142, 197, 198
Lead ore	143, 218, 221
Limestone	143, 230
Oil shale	143, 235
Sandstone	143, 245
Blast furnaces	204, 211
Coal conveyed by rail	169
Lead smelters	228
Persons employed	55, 61, 64, 143
Lancashire, Clay	140, 156
Coal	140, 160, 164
Gravel and sand	140, 190
Igneous rocks other than granite	140, 193
Iron ore	140, 197, 199, 200
Iron pyrites	140, 214
Limestone	141, 229
Rock salt	141, 241
Salt from brine	141, 241
Sandstone	141, 244
Slate	141, 248, 249
Blast furnaces	204, 207
Coal conveyed by rail	168, 169
Copper smelters	187

	Page.
Lancashire, Lead smelters	227
" Persons employed	55, 57, 60, 63, 141
" Zinc smelters	265
Lancashire and Cheshire Coal-fields, Fatal Accidents	83-86
" Output of Mineral	162, 163
" Persons employed	53, 54
Lancashire and Yorkshire Railway, Coal and Coke	168
carried	305-308
Laterite, Output of India	222, 223
Lead obtainable from British ores	121, 218-222, 226
" imported foreign ores	226
" Prices of, in the London market	222, 223
" Quantity available for home consumption	226
" Smelters in United Kingdom	227, 228
Lead and lead ore, Exported	223-225
" Imported	225, 226
Lead and lead ore, Output of :	
United Kingdom 10, 39, 121, 145, 218-222, 277, 282, 283	
Algeria	277, 328
Austria	277, 332
Belgium	277, 342
Bolivia	277, 344
British Columbia	277, 291
Canada	277, 289
Chili	277, 347
France	277, 355
German Empire	277, 360
Greece	277, 372
Hungary	277, 378
Italy	277, 380
Japan	277, 381
Mexico	277, 381
New Caledonia	277, 383
New South Wales	277, 314
Peru	277, 386
Portugal	277, 388
Prussia	277, 366
Quebec	277, 318
Queensland	277, 393
Russia	277, 395
Servia	277, 398
South African Republic	277, 321
South Australia	277, 402
Spain	277, 405
Sweden	277, 322
Tasmania	277, 408
Tunis	277, 413
United States	277, 413
Lead poisoning cases at Broken Hill Mines (New South Wales)	315
Leeds and Liverpool Canal Co. Coal traffic	171
Leeward Islands (<i>see</i> Redonda and Sombrero).	
Legislation relating to Mines in :	
British Columbia	292
India	310
Natal	311
New Zealand	317
Queensland	319
Victoria	324
United States	410, 411
Leicestershire, Clay	140, 156
Coal	140, 160, 164
Granite	140, 190
Gravel and sand	140, 191
Iron ore	140, 197, 201
Limestone	141, 229
Slate	141, 248
Blast furnaces	204, 207
Coal conveyed by rail	168, 169
Persons employed	55, 60, 63, 141
Leitrim Co., Coal	144, 161, 164
Sandstone	145, 245
Persons employed	56, 65, 145
Lignite (<i>see also</i> Brown coal), Output of :	
United Kingdom	228
Bulgaria	346
France	356
Greece	372
Portugal	388
Roumania	390
Russia	394
Servia	395
Victoria	324
Limerick Co., Igneous rocks other than granite... ..	144, 194
Limestone	145, 230
Sandstone	145, 245
Persons employed	65, 145
Lime or limestone, Output of :	
United Kingdom	10, 39, 121, 145, 282
Algeria	328
Bavaria	365
Belgium	342
Canada	289
Chili	347

	Page.
Ochre and Umber, Output of—cont.	
Cyprus	300
France	356
India	305, 308
Quebec	294
Saxony	371
Spain	402
Ohio, Accidents at Coal Mines	414
Persons employed	411
Oil shale, Output of :	
United Kingdom	10, 39, 121, 145, 235, 236, 282
New South Wales	314
Oil stones, Output of United States	413
Onyx, Output of :	
Algeria	328
France	356
Tunis	408
Ontario, Accidents	278, 294
Mineral output	293
Persons employed	293
Opal, Output of :	
New South Wales	314
Queensland	314
Orange Free State Diamond Mines and Coal-field	384
Orkney, Sandstone	143, 245
Persons employed	64, 143
Output of Minerals from Mines in each inspection district under the Coal Mines Act	14, 15
Output of Minerals from Mines in each inspection district under the Metalliferous Mines Act	16, 17
Output of Minerals from Quarries in each inspection district under the Quarries Act	18, 19
Output of Minerals from certain shallow workings	20, 21
Output of Minerals from each county under the Coal Mines Act...	124-127
Output of Minerals from each county under the Metalliferous Mines Act	128-131
Output of Minerals from each county under the Quarries Act	132-137
Output of Minerals from shallow workings, brine wells, &c.	138, 139
Output of Minerals from the several Coal-fields	162, 163
" " from Mines, 1873 to 1898	37
" " from Mines and Quarries, 1873 to 1898	38, 39
" " in United Kingdom, General Summary	10, 121
" " in British Colonies	277, 284-326
" " in Foreign Countries	277, 327-414
" " (see also under each Colony and Country, and under each Mineral).	
Overwinding, Accidents from	28, 29
Remarks by Mr. J. S. Martin	76
Oxfordshire, Chalk	140, 154
" Chert and flint	140, 155
" Clay	140, 156
" Iron ore	140, 197, 201
" Limestone	141, 229
" Sandstone	141, 244
" Persons employed	60, 63, 141
Ozokerite, Output of Austria	333

P.

PARAG, Mineral output	301
Paraguay, Mineral deposits of	385
Patent fuel, Exported	165, 176-178
Shipped coastwise	173, 174
Perth, Output of :	
Bavaria	365
Belgium	342
France	356
Perth, Output of :	
France	355
Italy	378
Petroleum, Coal	142, 161, 164
" Igneous rocks other than granite	142, 194
" Limestone	143, 230
" Sandstone	143-245
Persons employed	55, 64, 143
Pembroke, Clay	142, 166
" Coal and anthracite	142, 161, 164
" Granite	142, 190
" Igneous rocks other than granite	142, 193
" Limestone	143, 229

Pembroke, Sandstone	143, 244
" Slate	143, 248
Persons employed	55, 64, 143
Perak, Mineral output	301
Persia, Minerals obtained in	385
Pennsylvania, Accidents	414
Output of Coal	414
Persons employed	411
Persons employed in inspection districts under the Coal Mines Act	11
Persons employed in inspection districts under the Metalliferous Mines Act	12
Persons employed in inspection districts under the Quarries Act	13
Persons employed in each county under the Coal Mines Act	125, 127
Persons employed in each county under the Metalliferous Mines Act	129, 131
Persons employed in each county under the Quarries Act	63-65, 133, 135, 137
Persons employed in the several Coal-fields	53, 54
" " at Coal Mines	52, 53, 55
" " Iron Mines	52, 56-58
" " "other" Mines	52, 58-61
" " different kinds of Quarries	62
" " Mines, 1873 to 1898	36
" " Mines and Quarries in United Kingdom, Summary	9, 276, 281
" " Mines and Quarries in British Colonies, Summary of	276
Persons employed at Mines and Quarries in Foreign Countries, Summary of	276
Persons employed in Mining in :	
Algeria	276, 327
Austria	276, 330-332
Banca	350
Bavaria	364
Belgium	276, 340, 341
Billiton	350
Bohemia	337
Bosnia and Herzegovina	276, 339
British Columbia	291
British Guiana	276, 285
British New Guinea	276
Bulgaria	276, 346
Canada	276
Cap Colony	276, 295
Ceylon	276, 298
Chili	276, 346
Denmark	276, 350
Dutch East Indies	276, 350-354
Federated Malay States	276, 300
France	276, 354, 355
German Empire	276, 359, 360
Gold Coast	276, 302
Greece	276, 372
Greenland	276, 350
Holland	276, 373
Hungary	337
India	276, 304
Italy	276, 377
Japan	276, 379
Kimberley	276, 295
Mexico	276, 381
Natal	276, 311
New Caledonia	276, 388
New South Wales	276, 313
New Zealand	276, 316
Norway	276, 384
Nova Scotia	292
Ontario	292
Peru	276, 385
Portugal	276, 387
Prussia	365
Quebec	294
Queensland	276, 318
Redonda	276, 319
Russia	276, 392
Saxony	370
Servia	276, 395
Siam	276, 396
Singkep	351
South African Republic	276, 397, 398
South Australia	276, 320
Spain	276, 401
Sumatra	352
Sweden	276, 404
Switzerland	276, 406
Tasmania	276, 322
United States	276, 411, 412
Victoria	276, 324
Western Australia	276, 325
Persons employed at Petroleum Wells :	
Austria	332
Russia	392

	Page.		Page.
Persons employed at Quarries :		Pozzolana, Output of Switzerland	407
Algeria	327	Precious stones, Output of :	
Belgium	340	Cape Colony	296
British Guiana	285	Ceylon	299
Ceylon	298	India	305
Channel Islands	299	New South Wales	314
France	355	Queensland	318
Holland	374	Siam	396
Italy	377	United States	413
Peru	385	Prices of sea-borne Coal in the London market...	166
Portugal	387	Coal at the pit's mouth	160, 161, 164
Sweden	404	at various shipping ports	167
Switzerland	406	Diagram shewing fluctuations from 1873	
Persons employed at Salt Works :		to 1898	267
Austria	331	Pig iron at the works	212, 213
Bosnia and Herzegovina	339	Antimony in London market	147
German Empire	360	Copper	181, 182
Italy	377	Lead	222, 223
Russia	392	Standard silver	247
Persons employed at Turbaries :		Tin	256
Italy	377	Zinc	265, 266
Perthshire, Igneous rocks other than granite	142, 194	Cleveland Pig, Copper, Lead, Tin, and Zinc ;	
Clay	142, 156	Diagram shewing fluctuations from 1873	
Coal	142, 161, 164	to 1898	267
Limestone	143, 230	Props and timbering, Remarks on the use of	74, 75
Sandstone	143, 245	Prosecutions under the Mines Act	98, 99
Slate	143, 248	Quarries Act	100
Persons employed	55, 64, 143	Factory and Workshop Acts	101
Peru, Mineral output	277, 386	Prussia, Accidents	367-369
Persons employed	276, 385	Mineral output	366, 367
Petroleum, Imported	237	Persons employed	365
Petroleum, Output of :		Visit of Mining Commission	103, 104
United Kingdom	10, 121, 236, 277, 282	Regulation as to knowledge of language by	
Austria	277, 333	persons employed below ground	370
Bavaria	365	Pumice, Output of :	
Canada	277, 289	Mexico	382
Dutch East Indies	277, 351, 352	United States	413
German Empire	277, 360	Pyrites (see Iron pyrites).	
Great Britain	236, 277		
Hungary	338		
India	277, 305, 307, 308		
Italy	277, 37e		
Japan	277, 390		
Ontario	293		
Peru	277, 385		
Prussia	366		
Roumania	277, 390		
Russia	277, 393		
Sumatra	352		
United States	277, 413		
Philippine Islands, Mineral deposits	386		
Phosphate of alumina, Output of Redonda	319		
Phosphate of lime, Conveyed by railway...	238		
Imported	238		
Output of :			
United Kingdom	10, 39, 121, 237		
Algeria	238, 282		
Aruba	328		
Belgium	352		
Canada	342		
Chili	289		
Dutch West Indies	347		
France	352		
French Guiana	356		
Norway	357		
Quebec	384		
Russia	294		
Spain	393		
Tunis	402		
United States	408		
Pig iron (see Iron, Pig).	413		
Platinum, Output of :			
Canada	289		
Colombia	347		
New South Wales	314		
Russia	393		
United States	413		
Plumbago (see Graphite).			
Porcelain earth, Output of Bavaria	365		
Porphyry, Output of Queensland	318		
Porto Rico, Mineral deposits	387		
Accidents	278, 388		
Mineral output	277, 388		
Persons employed	276, 387		
Portuguese East Africa, Minerals	389		
Potassium salts, Output of :			
German Empire	360, 361		
Prussia	366, 367		
Potter's clay, Exported	158		
Output of :			
United Kingdom	156		
France	356		
Tunis	408		

R.

	Page.
RADNORSHIRE , Gravel and sand	142, 190
" Igneous rocks other than granite	142, 193
" Limestone	143, 229
" Sandstone	143, 244
" Persons employed... ..	61, 64, 143
Railway traffic of Coal and coke	168-170
Railways and sidings, Accidents on, at Mines 22-25, 28-31, 82,	83, 85, 86
" " " Quarries 26, 27, 32, 33,	90, 93, 94, 96
Redonda , Output of Phosphate of alumina	319
" Persons employed	276, 319
Red "oxide of iron, Output of Gloucestershire and	
Somerset	234
Regulus , Exported	184
" Imported	185, 186
Renfrewshire , Barytes	142, 151, 152
" Clay	142, 156
" Coal	142, 161, 164
" Gravel and sand	142, 191
" Igneous rocks other than granite	142, 194
" Iron ore	142, 197, 198
" Limestone	143, 230
" Oil shale	143, 235
" Sandstone	143, 245
" Coal conveyed by rail	169
" Persons employed	55, 58, 61, 64, 143
Rhodesia , Output of Gold	277, 320
Robson, J. T. , on the use of safety lamps	73
" on systematic timbering	75
Roburite , Accidents with	78
Rock salt , Conveyed by railways, &c.	241
" Exported	243
" Output of United Kingdom	10, 16, 17, 241
Ronaldson, J. R. , Remarks on Ayr Colliery explosion	72
" " " Montgomerie shaft acci-	
dent	76, 77
" " " Bankhead Pit irruption	
of water	80
Roofing slates and slate slabs , Exported	252
" " " Output of United King-	
dom	248-251
Ropes or chains breaking , Accidents from 22-33, 76, 77, 78,	85, 86, 90, 93
Rosecommon Co. , Coal	144, 161, 164
" Sandstone... ..	145, 245
" Persons employed	56, 65, 145
Ross and Cromarty , Sandstone	143, 245
" Persons employed	64, 143
Roumania , Mineral output	277, 390
Roxburgh , Igneous rocks other than granite	142, 194
" Limestone	143, 230
" Sandstone	143, 245
" Persons employed	64, 143
Rubies , Output of India	305, 307
Russia , Accidents	278, 391
" Mineral output	277, 393
" Persons employed	276, 392
Rutile (<i>see</i> Titanium).	
Rutland , Iron ore	140, 197, 201
" Limestone	141, 229
" Sandstone	141, 244
" Persons employed	63, 141

S.

SAFETY-LAMPS , Accidents caused by	71
" Remarks by Mr. J. S. Martin and Mr.	
J. T. Robson on the use of	73
St. Martin , Salt workings (<i>see</i> Dutch West Indies).	
Salt , Exported	243

	Page.
Salt , Conveyed by railway, canal, &c.	242-243
" Rock and white , Output of :	
United Kingdom	10, 39, 121, 145, 241, 277, 282
Algeria	277, 328
Austria	277, 333
Bahamas	277, 284
Bavaria	365
Bonaire and St. Martin	352
Bosnia and Herzegovina	277, 339
Brasil	345
Canada	277, 289
Cape Colony	277, 295
Ceylon	277, 299
Cyprus	277, 300
Dutch West Indies	277, 353
France	277, 355
German Empire	277, 360, 361, 362
Greece	277, 372
Hungary	333
India	277, 303-308
Italy	277, 378
Japan	277, 380
Mexico	277, 381
Ontario	293
Peru	277, 386
Prussia	366, 367
Queensland	277, 318
Roumania	277, 390
Russia	277, 393
South Australia	277, 321
Spain	277, 402
Switzerland	277, 407
Tunis	277, 408
Turkey	277, 409
Turks and Caicos Islands	323
United States	277, 413
Venezuela	415
Western Australia	277, 325
Saltpetre Output of India	305
Sand and gravel , Output of :	
United Kingdom	10, 14-19, 282
Algeria	328
Bavaria	365
Belgium	342
Canada	289
France	356
Sandstone , Output of :	
United Kingdom	10, 39, 121, 145, 244, 245, 282
Bavaria	365
India	303-308
Queensland	318
Sandstone Quarries , Accidents	88, 89, 97
" Persons employed	62
Sandwich Islands , Mineral Deposits	394
Sarawak , Mineral resources	287
Saxony , Accidents	371
" Mineral output	370, 371
" Persons employed	370
Scotch Coal-fields , Counties	52
" " Fatal Accidents	83-86
" " Output of minerals	162, 163
" " Persons employed	53, 54
Scotland , Summary of Mineral output	123
" Copper smelters	187
" Lead smelters	228
" Railway traffic of Coal and coke	169, 170
Selangor , Mineral output	302
Selkirk , Igneous rocks other than granite	142, 194
" Persons employed	64, 143
Senegal , Gold exported	277, 394
Servia , Accidents	278, 395
" Mineral output	277, 395
" Persons employed	276, 395
Severn Navigation Coal traffic	171
Shafts , Accidents in	22-25, 28-31, 40, 41, 70,
	75-77, 85, 86
Shale (<i>see</i> Oil shale).	
Shetland , Sandstone... ..	143, 245
" Persons employed	64, 143
Shipments of China , clay, and stone	157
" Coal, coke, &c. coastwise	173, 174
Shot-firing , Accidents caused by, in Mines	71, 78, 79
" " " Quarries	92, 93
Shropshire , Barytes	140, 151, 152
" Clay	140, 156
" Coal	140, 160, 164
" Gravel and sand	140, 191
" Igneous rocks other than granite	140, 193
" Iron ore... ..	140, 197, 198
" Iron pyrites	140, 214
" Lead ore	141, 218, 219
" Limestone	141, 229
" Sandstone	141, 244
" Zinc ore... ..	141, 260, 261

	Page.
Shropshire, Blast furnaces	204, 208
" Coal conveyed by rail... ..	168, 169
" Lead smelters	227
" Persons employed	55, 57, 60, 63, 141
Shropshire Union Canal Coal traffic	171
Siam. Mineral output	277, 396
" Persons employed	276, 396
Silicon iron	205
Silver bullion and specie, Imported and exported, Value of	246
" extractors and refiners (<i>see</i> Copper and Lead smelters)	186, 247
" extracted from imported Pyrites	216, 245
" obtainable from British Lead ore	121, 218-222, 245, 277, 283
" Prices of standard, in London market	247
" ore, Imported	246
Silver or silver ore, Output of :	
Argentina Republic	277, 329
Austria	277, 332
Bolivia	277, 344
British Columbia	291
Canada	277, 289
Chili	277, 347
Colombia	277, 348
Ecuador	277, 353
German Empire	277, 361, 363
Great Britain and Ireland	121, 245, 277, 283
Hungary	338
Italy	277, 378
Japan	277, 380
Mexico	277, 381
New South Wales	277, 314
New Zealand	277, 316
Norway	277, 384
Ontario	293
Peru	277, 386
Portugal	277, 388
Prussia	366
Queensland	277, 318
Russia	277, 393
Saxony	371
Spain	402
Sweden	277
Tasmania	277
United States	277, 413
Silver lead ore, Output of :	
United Kingdom	218-221
Algeria	328
Chili	347
France	355
Greece	372
Hungary	338
New Caledonia	383
New South Wales	314
South African Republic	398
South Australia	321
Spain	402
Sweden	405
Tasmania	322
Victoria	324
Singkep, Output of Tin	351
" Persons employed	351
Slate, Output of :	
United Kingdom	10, 39, 121, 145, 248-251, 282
Bavaria	365
Belgium	342
Canada	289
France	356
India	305-308
Newfoundland	312
Quebec	294
Queensland	318
Slate Quarries, Accidents	88, 89, 97
" Persons employed	63
Slates, roofing, Exported	252
Sligo Co., Limestone	145, 230
" Persons employed	61, 65, 145
Sligo, Leitrim and Northern Counties Railway Coal and Coke traffic	170
Smelters, Antimony	148
" Copper	186, 187
" Lead	227, 228
" Tin	258
" Zinc	265
Soapstone, Output of :	
United Kingdom	10, 121, 252, 282
Bavaria	365
Canada	289
France	356
Great Britain and Ireland	282

	Page.
Soapstone, Output of— <i>cont.</i>	
India	305-308
Spain	408
United States	418
Soda (<i>see</i> Nitrate of soda).	
Sodium, Production in United Kingdom	121, 252, 283
Sodium sulphate, Output of :	
German Empire	361
Prussia	367
Russia	393
Somaliland, Mineral deposits	395
Sombrero	330
Somersetshire, Barytes	140, 151
" Chalk	140, 154
" Clay	140, 156
" Coal	140, 160, 164
" Fuller's earth	156
" Gravel and sand	140, 191
" Gypsum	140, 192
" Iron ore	140, 198, 201
" Lead ore	141, 218, 220, 223
" Limestone	141, 229
" Ochre	141, 233, 234
" Sandstone	141, 244
" Slate	141, 248
" Sulphate of strontia	141, 253
" Coal conveyed by rail	168, 169
" Lead smelters	227
" Persons employed	55, 60, 63, 141
Soudan, Mineral wealth	353
South African Republic, Accidents	278, 399, 400
" " " Mineral output	277, 397, 398
" " " Persons employed	276, 397, 398
South Australia, Accidents	278, 321
" " " Mineral output	277, 330
" " " Persons employed	276, 330
South Wales Coal-field, Fatal accidents	83-86
" " " Mineral output	162, 163
" " " Persons employed	53, 54
Spain, Accidents	278, 402, 403
" Mineral output	277, 402
" Persons employed	276, 401
Special rules at Quarries	103
Spelter (<i>see</i> Zinc)	260
Spiegeleisen (<i>see</i> Iron)	205
Staffordshire, Clay	140, 156
" Coal	140, 160, 164
" Gravel and sand	140, 191
" Gypsum	140, 192
" Igneous rocks other than granite	140, 193
" Iron ore	140, 197, 198, 201
" Iron pyrites	140, 214
" Limestone	141, 229
" Oil shale	141, 235
" Petroleum	236
" Salt	241
" Sandstone	141, 244
" Blast furnaces	204, 208
" Coal conveyed by rail	168, 169
" Persons employed	55, 57, 60, 63, 141
Staffordshire and Worcestershire Canal Coal and Coke traffic	172
Standard silver, Prices in the London market	247
Steatite (<i>see</i> Soapstone).	
Stirlingshire, Clay	142, 156
" Coal	142, 161, 164
" Gravel and sand	142, 191
" Igneous rocks other than granite	143, 194
" Iron ore	142, 197, 198
" Limestone	143, 230
" Oil shale	143, 235
" Sandstone	143, 245
" Blast furnaces	204, 211
" Coal conveyed by rail	168, 169
" Persons employed	55, 61, 64, 143
Stone, Output of :	
The United Kingdom	145
Algeria	328
Belgium	342
Canada	289
Ceylon	29
Channel Islands	29
France	356
Holland	3
India	305-308
Italy	3
New South Wales	312
Ontario	29
Queensland	31
Roumania	39
Switzerland	40
Tunis	40
United States	41
Victoria	32

	Page.
Underground fires at Mines ... 22, 23, 28, 29, 78, 80, 85, 86	86
" fire at Whitwick Colliery 66, 80	80
" haulage accidents ... 22, 23, 28-31, 78, 80, 81, 85, 86	86
" " " Remarks by Mr. W. N. Atkinson 81	81
Union Canal Coal and Coke traffic 172	172
United States, Accidents 278, 414	414
" Legislation relating to Mines in Colorado 410, 411	411
" Mineral output 277, 412-414	414
" Persons employed 276, 411, 412	412
Uranium ore, Output of :	
United Kingdom 10, 39, 121, 259, 282	282
Austria 332	332
German Empire 361	361
Saxony 371	371
Uruguay, Output of gold 277, 415	415
Utah, Accidents at Coal Mines 414	414
" Persons employed 411	411

V.

VENEZUELA, Output of gold 277, 415	415
Victoria, Accidents 278, 324	324
" Legislation relating to Mines 324	324
" Mineral output 277, 324	324
" Persons employed 276, 324	324
Vitriol ore, Output of :	
German Empire 361	361
Prussia 366	366

W.

WALES, Coal conveyed by rail from North and South Wales 168, 169	169
" Mineral output of, Summary 122	122
(See also under each County.)	
" North and South Wales Coal-fields :	
Accidents in Mines 84, 85, 86	86
Mineral output 162, 163	163
Persons employed 53, 54	54
Warwickshire, Clay 140, 156	156
" Coal 140, 160, 164	164
" Gravel and sand 140, 191	191
" Igneous rocks other than granite 140, 193	193
" Iron ore 140, 197, 198	198
" Iron pyrites 140, 214	214
" Limestone 141, 229	229
" Sandstone 141, 244	244
" Coal conveyed by rail 168, 169	169
" Copper smelters 187	187
" Persons employed 55, 60, 63, 141	141
Washington, Accidents at coal mines 414	414
" Persons employed 411	411
Waterford Co : Clay 144, 157	157
" Gravel and sand 144, 192	192
" Limestone 145, 230	230
" Sandstone 145, 245	245
" Persons employed 65, 145	145
Waterford and Central Ireland Railway Coal and Coke traffic 170	170
Waterford, Limerick and Western Railway Coal and Coke traffic 170	170
Wells, Brine, dredging, &c., County output of minerals from 138, 139	139
Western Australia, Fatal accidents 278, 326	326
" Mineral output 277, 325	325
" Persons employed 276, 325	325

Westmeath Co., Limestone 145, 230	230
" Sandstone 145, 245	245
" Persons employed 65, 145	145
Westmorland, Clay 140, 156	156
" Coal 140, 160, 164	164
" Granite 140, 190	190
" Gypsum 140, 192	192
" Igneous rocks other than granite 140, 193	193
" Lead ore 141, 218, 221	221
" Limestone 141, 229	229
" Sandstone 141, 244	244
" Slate 141, 248, 249	249
" Lead smelters 228	228
" Persons employed 55, 60, 63, 141	141
West Virginia, Accidents at Coal Mines 414	414
" Persons employed 411	411
Wexford Co., Igneous rocks other than granite 144, 194	194
" Limestone 145, 230	230
" Sandstone 145, 245	245
" Slate 145, 248	248
" Persons employed 65, 145	145
Whetstones, Production of :	
Bavaria 365	365
France 356	356
United States 413	413
White salt, Conveyed by railway, canal, &c. 242, 243	243
" Exported 243	243
" Produced in United Kingdom 241	241
Whitwick Colliery fire 66, 80	80
Wicklow Co., Granite 144	144
" Gravel and sand 144, 192	192
" Iron pyrites 144, 214	214
" Lead ore 145, 218, 221	221
" Ochre 145, 233, 234	234
" Persons employed 61, 65, 145	145
Wigtown, Igneous rocks other than granite 142, 194	194
" Persons employed 64, 143	143
Wiltshire, Chalk 140, 154	154
" Chert and flint 140, 155	155
" Clay 140, 156	156
" Gravel and sand 140, 191	191
" Iron ore 140, 197, 201	201
" Limestone 141, 229	229
" Sandstone 141, 244	244
" Blast furnaces 204, 209	209
" Persons employed 60, 63, 141	141
Wolfram, Output of :	
United Kingdom 10, 39, 121, 259, 282	282
Austria 332	332
Bolivia 344	344
German Empire 361	361
Portugal 388	388
Queensland 318	318
Saxony 371	371
Spain 402	402
Worcestershire, Clay 140, 156	156
" Coal 140, 160, 164	164
" Gravel and sand 140, 191	191
" Igneous rocks other than granite 140, 193	193
" Iron ore 140, 197, 198	198
" Limestone 141, 229	229
" Salt 141, 241	241
" Sandstone 141, 244	244
" Blast furnaces 204, 209	209
" Copper smelters 187	187
" Persons employed 55, 60, 63, 141	141

Y.

YORKSHIRE, Alum shale 140, 147	147
" Barytes 140, 151, 152	152
" Chalk 140, 154	154
" Chert and flint 140, 155	155
" Clay 140, 156	156
" Coal 140, 160, 164	164
" Gravel and sand 140, 191	191
" Igneous rocks other than granite 140, 193	193
" Iron ore 140, 197, 198, 201	201
" Lead ore 141, 218, 220	220
" Limestone 141, 229	229
" Oil shale 141, 235	235
" Salt 141, 241	241

	Page.		Page.
Yorkshire, Sandstone	141, 244	Zinc and zinc ore, Exported	264
" Slate	141, 248	" " Imported	263
" Blast furnaces	204, 209	" or zinc ore, Output of :	
" Coal conveyed by rail	168, 169	United Kingdom	10, 39, 121, 145, 260-262, 277, 282, 283
" Copper smelters... ..	187	Algeria	277, 328
" Lead smelters	228	Austria	277, 332
" Persons employed	55, 57, 60, 63, 141	Belgium	277, 342
" Coalfield, Fatal accidents	84, 85, 86	Bosnia and Herzegovina	277, 339
" " Mineral output	162, 163	France	277, 355
" " Persons employed	53, 54	German Empire... ..	277, 361
		Greece	277, 372
		Italy	277, 378
		Mexico	277, 381
		New South Wales	277, 314
		Norway	277, 384
		Prussia	366
		Quebec	294
		Russia	277, 393
		Saxony	371
		Serbia	277, 395
		South Australia... ..	277, 321
		Spain	277, 402
		Sweden	277, 405
		Tunis	277, 403
		United States	277, 413

Z.

ZINC, Average price in the London market ..	265, 266
" Diagram shewing fluctuations in price from 1873 to 1898	267
" Obtainable from British ores	121, 260-262
" Smelters in United Kingdom	265



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ONE OF HER MAJESTY'S INSPECTORS OF MINES.

Presented to both Houses of Parliament by Command of Her Majesty.



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GENERAL REPORT AND STATISTICS
For 1899.

PART IV.—COLONIAL AND FOREIGN STATISTICS.

STATISTICS RELATING TO PERSONS EMPLOYED, OUTPUT,
AND ACCIDENTS AT MINES AND QUARRIES IN THE
BRITISH COLONIES AND IN FOREIGN COUNTRIES.

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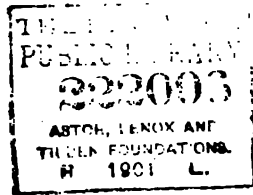
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CONTENTS.

	PAGE.
Introduction	281, 282
British Empire:—	
Summary of Persons Employed at Mines and Quarries	284
Summary of Output of certain Minerals	285
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries	286, 287
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings:—	
United Kingdom	289-291
British Colonies and Dependencies:—	
Aden	292
Bahamas	292
Barbados	292
Bechuanaland Protectorate	293
British Borneo	293
British Central Africa Protectorate	294
British Guiana	294, 295
British New Guinea	295
British Solomon Islands	296
Canada	296-302
Cape Colony	303-306
Ceylon	307, 308
Channel Islands	308
Christmas Island	308
Cyprus	309
Federated Malay States	309-311
Gold Coast	311, 312
India	312-319
Malta	319
Natal	319, 320
Newfoundland	320, 321
New South Wales	321-323
New Zealand	324, 325
Nigeria	326
Queensland	326, 327
Redonda	328
Rhodesia	328
Sombrero	328
South Australia	329, 330
Straits Settlements	330
Tasmania	330, 331
Trinidad	331, 332
Turks and Caicos Islands	332
Victoria	332-334
Western Australia	334-336

Foreign Countries :—

PAGE 1

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MINES AND QUARRIES: GENERAL REPORT AND STATISTICS

For 1899.

PART IV.—COLONIAL AND FOREIGN STATISTICS.

INTRODUCTION.

The compilation of a work which may be correctly described as the Mining Statistics of the World is for many reasons a task beset with great difficulties. In some countries there is no Mining Department, or, if such an office exists, it is unable to furnish any reliable statistics. In other countries the publication of the official volumes, from which the information has to be collected, is subject to long delays. For instance, the Statistical Abstract for Russia for the year 1898 will not be published for some months, and the advance figures of output did not reach the Home Office until the *11th instant*. No figures for the year 1899 are yet available in the case of Austria proper, though the sister Kingdom of Hungary is able to furnish complete Returns at a fairly early date.

The first two Summary Tables (Nos. 274 and 275) give, as usual, a general idea of the mining industry of the world, showing the number of persons employed, and the output of minerals and metals. The value of this part of the General Report is enhanced by the Table of statistics (No. 276) relating to accidents, from which we are able to ascertain the relative safety of the miner's occupation in various countries.

According to the figures which have been received, the British Empire employs more than one-third of all the persons engaged in mining and quarrying in the world, but it must not be forgotten that published figures are far from being as complete as one would like. In our own country the quarriers in pits less than 20 feet deep do not appear, and in the case of the United States we have no record of the persons employed in many of the ore-mining districts nor of the quarriers. Again, it seems almost incredible that the mining industry of Ceylon should afford occupation to more persons than the whole of France, and until each country will supply accurate statistics showing the average number of persons engaged in mining and quarrying, too much stress must not be laid upon the figures published, which are merely the best obtainable at the present moment.

The figures relating to output of the more important minerals may be regarded as trustworthy. In the case of coal there is certainly no reason to doubt their correctness, as the chief producers are countries with efficient Statistical Departments.

Nearly one-third of the coal supply of 1899 was furnished by the British Empire. The United States supplied nearly another third, and Germany more than a sixth; the remainder was contributed mainly by Austria-Hungary, France and Belgium.

For the first time the United States have outstripped us as a coal-producing country. Our increase in the output was large, viz., 18 million metric tons; but that of the United States was far larger, viz., 30 million metric tons, or, roughly speaking, as much as the entire output of France. One may well ask how the United States were able in the course of the short period of 12 months to make such an enormous addition to their output. The answer, as explained on page 430, is simple—increased use of coal-cutting machinery.

The difference between the two great coal-producing countries of the world in respect to the use of labour-saving appliances is very marked indeed; whilst the United States owe 23 per cent. of their total output of coal to the use of coal-cutting machinery, only a little more than $1\frac{1}{2}$ per cent. was so obtained in this country; for we learn from my colleague, Mr. Gerrard,* that the total amount of coal cut by machinery in 1899 was only $3\frac{1}{2}$ million tons.

The path of progress in coal-getting is, therefore, clearly pointed out to us by our American cousins.

The figures given in the column for the various metals are no measure of the quantity produced by metallurgical works in any given country. They simply show the amount obtainable from the ores raised in the country. It is a matter of common knowledge, for instance, that Great Britain is largely dependent upon Spain, especially for supplies of iron ore, and the metal contained in that ore is credited to its home and not to us.

As gold producers the British Possessions stand high, and, thanks to the increased output of Canada and Western Australia, we reached a total of 170,287 kilograms (5,474,850 ounces), or more than one-third of the world's output.

The copper production of the British Empire, viz., 34,000 metric tons, is small compared with the world's output of half-a-million tons. The same may be said in regard to lead, petroleum, silver and zinc. We produce, however, one-fourth of the salt and more than half of the tin.

Accidents. The standard adopted for death-rates is the number of persons killed per 1,000 employed.

It is very desirable that all mining nations should supply statistics showing the death-rates of the true miners, *i.e.*, the persons employed below ground; for want of complete statistics, we have been obliged in the summary table to take the ratios for all the persons employed in the industry, whether above or below ground; but underground death-rates have been calculated separately for many countries, and appear in the detailed tables for those countries.

While there is still much room for improvement, it is only right, on behalf of the British mine owners, to point out that mining is conducted in this country with a far smaller risk of accident to the workers than is the case in many others.

C. LE NEVE FOSTER.

HOME OFFICE, WHITEHALL,
19th December, 1900.

* *Presidential Address to the Midland Institute of Mining and Mechanical Engineers.*—
8th December, 1900.

SUMMARIES.

PERSONS EMPLOYED—OUTPUT—ACCIDENTS,
1898-1899.

TABLE No. 274.

SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the YEARS 1898 and 1899.

Country.	1898.	1899.
GREAT BRITAIN AND IRELAND	875,603	862,161
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—		
Aden	*	*
Bahamas	425	214
Barbados	100	100**
Bechuanaland Protectorate	*	*
British Borneo	*	*
British Central Africa Protectorate	*	*
British Guiana	6,590	6,590
British New Guinea	325||	325||
British Solomon Islands... ..	*	*
Canada (a)... ..	19,538	21,635††
Cape Colony	17,065	17,455
Ceylon	310,210|| (b)	310,210|| (b)
Channel Islands	1,200	1,200
Cyprus	*	*
Federated Malay States	125,580	130,962
Gold Coast... ..	2,913	2,913**
India	131,681	146,422††
Malta	*	*
Natal (including Zululand)	2,723	2,723**
Newfoundland	*	*
New South Wales	40,830	42,820
New Zealand	15,675	15,444
Nigeria	*	*
Queensland	13,413	13,803
Bedonda	29	29**
Rhodesia	*	*
South Australia	5,533	5,533**
Tasmania	6,180	6,180**
Trinidad	*	*
Turks and Caicos Islands	*	*
Victoria	31,734	31,021
Western Australia	13,066	17,131
TOTAL for the BRITISH EMPIRE	1,620,413	1,634,871
FOREIGN COUNTRIES:—		
Austria-Hungary	218,598	219,025††
Bosnia and Herzegovina	1,472	1,691
Belgium	160,150	163,682
Chili	15,955†	18,914†
Corea	1,200†	1,200**
Denmark	—	—
Greenland	118	75
France	292,821	302,085
Algeria	5,235	6,367
New Caledonia	5,090	5,090**
German Empire	498,569	527,355
Greece	*	*
Holland	3,269	3,502
Dutch East Indies	22,095	26,051††
Italy	94,858	101,608
Japan	132,731	132,731**
Luxemburg	5,648	6,057
Mexico	98,852||	98,852||
Norway	2,359	2,359**
Peru	105,000	105,000
Portugal	8,560	9,421
Roumania	*	*
Russia	239,434§	239,434§
Servia	1,553§	1,553§
Siam	22,000	22,000**
South African Republic... ..	100,098	100,098**
Spain	75,283	80,258
Sweden	13,527	13,097
Switzerland	1,864	1,877
United States	444,578(c)	487,813(d)
TOTAL for FOREIGN COUNTRIES	2,570,917	2,677,195
TOTAL for the WORLD	4,191,330	4,312,066

* Information not available.

† Employed at certain Gold Mines only.

|| Figures for 1897.

** Figures for 1898.

† Persons employed in Saltpetre Works only.

§ Figures for 1896.

†† Including some figures of 1898.

(a) For British Columbia, Nova Scotia, Ontario, and Quebec only.

(b) The official returns of persons employed give 1,108,306 for 1898, but as these figures do not appear to be an average, those for 1897 have been inserted in this table.

(c) Coal Miners only, and Ore Miners of Colorado, Marquette Co. (Michigan), and Montana.

(d) " " Colorado, California, and Houghton and Marquette Counties (Michigan).

BRITISH EMPIRE.

GREAT BRITAIN AND IRELAND.

WITH THE

ISLE OF MAN.

The following Tables summarize the results of Parts II. and III. of the General Report:—

TABLE 277.

PERSONS EMPLOYED at all the MINES for the Years 1898 and 1899.

Year.	Total Number of Mines at Work.	Below-ground.			Above-ground.			Total Below and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1898	4,002	587,297	None	587,297	148,702	5,126	153,828	741,125
1899	4,010	603,627	None	603,627	155,378	5,161	160,539	764,166
Increase or decrease ...	+ 8	+ 16,330	—	+ 16,330	+ 6,676	+ 35	+ 6,711	+ 23,041

TABLE 278.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the Years 1898 and 1899.

Year.	Total Number of Quarries at Work.	INSIDE THE QUARRIES, i.e., inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, i.e., outside the actual pits, holes, or excavations.			Total Number of Persons Employed Inside and Outside the Quarries.
		Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1898	6,948	62,745	7	62,752	70,221	1,505	71,726	134,478
1899	6,994	64,147	12	64,159	33,716	120	33,836	97,995
Increase or decrease	+ 46	+ 1,402	+ 5	+ 1,407	— 36,505	— 1,385	— 37,890	— 36,483

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—*continued*.

TABLE 279.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, and other WORKINGS.*

Mineral.	1898.			1899.		
	Quantity.		Value at the Mines and Quarries.	Quantity.		Value at the Mines and Quarries.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Alum clay (Bauxite)	12,402	12,801	2,898	8,009	8,138	1,871
Alum shale	18,617	13,836	1,702	5,820	5,913	724
Arsenical pyrites	11,144	11,323	8,144	13,519	13,736	12,158
Arsenic	4,174	4,241	53,787	3,829	3,880	54,236
Barytes	22,225	22,582	28,253	24,664	25,059	25,644
Bog ore	5,418	5,505	1,354	4,321	4,390	1,080
Chalk... ..	4,298,014	4,366,987	180,651	4,678,132	4,753,205	209,629
Chert and Flint	82,057	83,374	14,513	68,834	69,939	13,216
Clay	14,738,474	14,970,391	1,616,358	15,064,857	15,306,612	1,542,657
Coal	202,064,516	205,297,006	64,169,382	220,094,781	223,626,774	83,481,137
Copper ore	9,001	9,145	25,849	8,144	8,275	33,798
Copper precipitate	130	132	1,300	175	178	1,550
Fluor spar	56	57	49	783	796	841
Gold ore	703	714	1,158	3,047	3,096	10,170
Gravel and Sand	1,625,690	1,651,778	155,538	1,771,276	1,799,701	132,399
Gypsum	196,028	199,174	71,316	212,563	215,974	76,456
Igneous Rocks	4,478,308	4,550,174	1,042,000	4,709,925	4,785,508	1,095,763
Iron ore	14,176,938	14,404,444	3,406,628	14,461,330	14,693,400	3,895,485
Iron pyrites	12,108	12,302	4,804	12,230	12,426	4,671
Lead ore	32,985	33,514	267,402	30,999	31,496	296,784
Limestone (other than Chalk)	11,980,578	12,172,837	1,256,154	12,302,890	12,500,322	1,339,067
Manganese ore	231	235	200	415	422	249
Mica	907	921	454	650	660	244
Ochre, Umber, &c.	19,827	20,145	13,003	16,314	16,576	13,579
Oil shale	2,137,993	2,172,303	534,498	2,210,824	2,246,302	553,003
Petroleum	6	6	14	5	5	12
Phosphate of lime	1,550	1,575	2,713	1,446	1,469	2,529
Salt	1,878,665	1,908,813	620,115	1,914,893	1,945,022	644,174
Sandstone	5,242,115	5,328,238	1,632,786	5,212,624	5,296,274	1,653,704
Slate	668,859	679,592	1,900,228	639,840	650,108	1,787,071
Strontium sulphate	12,941	13,149	3,674	12,629	12,832	6,314
Tin ore (dressed)	7,330	7,498	288,325	6,392	6,494	440,509
Uranium ore	26	26	1,185	7	7	275
Wolfram	326	331	15,844	94	95	3,831
Zinc ore	23,552	23,930	117,784	23,135	23,506	139,482
Total values	—	—	77,415,063	—	—	97,470,296

* This table does not include the produce of quarries less than 20 feet deep except in the case of iron ore, ochre, phosphate of lime, strontium sulphate and tin ore.

BRITISH COLONIES AND DEPENDENCIES.

Aden.*

Salt is made by the evaporation of sea-water, and the Government revenue is partly obtained from duty upon this product.

TABLE 283.

	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
Salt	Statute Tons. 43,828	Metric Tons. 44,531	£ 15,696	Statute Tons. 41,217	Metric Tons. 41,878	£ 16,289

Bahamas.†

Bay salt is produced in the Bahamas by the solar evaporation of sea water. The principal producers are Inagua, Rum Cay, and Ragged Island. During the years 1898 and 1899 the number of persons employed was 425 and 214 respectively.

The output during the last two years has been as follows :—

TABLE 284.

	Year.	Quantity.		Value.
		Statute Tons.	Metric Tons.	£
	1898	1,512	1,536	800
	1899	1,130	1,148	486

Barbados.‡

The most important mineral product of the island is "manjak," a variety of glance pitch occurring in veins which traverse deposits of infusorial earth. The largest mine employs more than a hundred hands. The mineral is sold on the island at prices varying from 3*l.* 10*s.* to 7*l.* 10*s.* a ton; the superior qualities are used for making varnish, and the less valuable kinds for insulating purposes. The quantity exported in 1899 was 1,026 tons, valued at £4,617.

Petroleum has been discovered, and the value of the deposits is now being tested by bore-holes.

An Act has been passed by the Legislature of the island to regulate the working of manjak and other mines. The fourteen rules prescribed are borrowed from the Coal Mines Regulation Act, 1887.

* *Statistics of Mineral Production in India in the five years 1894 to 1898.* Calcutta, 1900, p. i.

† Official Return furnished by the Colonial Secretary, Nassau.

‡ Williams, "Barbados. Report for 1899." *Colonial Reports—Annual*, No. 294.—London, 1900 [Cd. 354], p. 16

British Central Africa Protectorate.*

Coal is being worked on a small scale on the Upper Zambesi.

A considerable amount of prospecting for gold is going on in the Central Angoniland District.

British Guiana.†

Like the adjoining part of Venezuela, the British Colony is gold-bearing in many places; the gold is obtained mainly from alluvial deposits, though much rich auriferous quartz exists. There has been little vein-mining up to the present time. The gold industry shows a falling off of 325 ozs. during the year 1899-1900.

No dredging has as yet been undertaken, but the success which has attended this method of working gold-bearing alluvia in New Zealand gives reasonable hopes that it may prove a source of wealth to British Guiana.

Geological surveys which have been made lately show that the gold-bearing parts of many of the rivers are much more extensive than was formerly supposed.

Mr. John H. Powell ‡ has lately given a concise general account of the gold mining industry in the Colony with a useful map.

TABLE 285.

PERSONS EMPLOYED at MINES, ALLUVIAL WORKINGS, and QUARRIES during the Years 1898-9 and 1899-1900.

Kind of Workings.	1898-9.	1899-1900.
Mines and Alluvial or Placer diggings	6,500 (a)	6,500 (a)
Granite Quarries... ..	90 (a)	90 (a)

(a) Approximate figures.

TABLE 286.

QUANTITY and VALUE of the MINERALS produced in 1898-9 and 1899-1900.

Mineral.	Financial Year 1898-9.			Financial Year 1899-1900.		
	Quantity.		Value.	Quantity.		Value.
	Ozs.	Kilos.	£	Ozs.	Kilos.	£
Gold	113,114	3,517	406,503	112,789	3,508	405,335
Granite... ..	Statute Tons. 6,459	Metric Tons. 6,562	4,036	Statute Tons. 4,778	Metric Tons. 4,855	2,986
Total value	—	—	410,539	—	—	408,321

* Commissioner Sharpe "Trade and General Condition of British Central Africa Protectorate for the Years 1898-99."—*Dipl. and Cons. Reports*, No. 2327, Ann. Ser., 1899 [C. 9044-153], p. 14.—Acting Vice-Consul Hillier "Trade of Chinde for the Year 1898."—*Dipl. and Cons. Reports*, No. 2328, Ann. Ser., 1899 [C. 9044-154] p. 3.

† Official Return furnished by the Department of Mines, Georgetown and: *British Guiana. Report of the Commissioner of Mines for the year 1898-99.* Georgetown, Demarara, 1899.

‡ *Trans. Inst. Min. and Met.*, London, 1900.

BRITISH GUIANA—*continued.*

The table below shows the output of the principal districts.

TABLE 287.

Gold obtained.

District.					Financial Year 1898-9.	Financial Year 1899-1900.
					Ozs.	Ozs.
Barima	...	...	...	...	14,673	16,389
Cuyuni	...	...	...	...	23,342	21,919
Essequibo	...	...	...	...	22,586	19,386
Potaro	...	...	...	...	30,921	29,765
Other districts	...	...	...	...	21,592	25,330
Total output in ozs.					113,114	112,789
" " kil.					3,517	3,508

TABLE 288.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1898-9 and 1899-1900.

Kind of Workings.	1898-9.		1899-1900.	
	Persons Killed.	Death-rate per 1,000 Persons employed.	Persons Killed.	Death-rate per 1,000 Persons employed.
Gold mines	1	.31	—	—
Alluvial or Placer diggings ...	1		4	.62
Granite Quarries	1	11.11	—	—

British New Guinea.*

Prospecting in New Guinea is no easy task, owing not only to physical difficulties, but also to attacks from the natives; consequently there is no reason for surprise that the mining industry makes slow progress. The number of ounces of gold exported in 1898-9 was 12,012. Until lately the gold has been obtained solely from alluvial deposits; however, quartz is now being crushed on Sudest Island.

TABLE 289.

Year.	Gold exported.		Value.
	Ozs.	Kil.	£
1897-98	6,830	213	25,612
1898-99	12,012	374	44,185

* *Annual Report on British New Guinea for 1898-99*, Brisbane, 1900, and: Winter, "British New Guinea Annual Reports for 1898-9," *Colonial Reports—Annual*, No. 292.—London, 1900. [Cd. 3-15.]

British Solomon Islands.*

Copper ore has been found in the Protectorate.

Canada.

Asbestos.—The Canadian asbestos, which mineralogically is chrysotile, occurs in small veins in serpentine in the eastern townships of the province of Quebec.

Chromic Iron Ore.†—This ore is obtained from irregular pockets in the serpentine of the province of Quebec.

Coal.—The coalfields, which have been most largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent, bituminous coal is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, and Springhill coalfields, in Nova Scotia. New Brunswick has a small area of thin seams of bituminous coal. The coal of the Pacific coast, generally bituminous, is of Cretaceous age, and is derived from collieries at Nanaimo, Wellington, and Comox, in Vancouver Island. Anthracite and bituminous coal occur in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams occurring near Cochrane improve in quality, and yield bituminous coal. Further west, again, is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of the Rocky Mountains, where the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal and semi-anthracite have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel is now rendered available for industrial purposes by a branch line of the Canadian Pacific Railway Company. All these coals are of Cretaceous age.

Copper.—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec. In the first of these provinces copper pyrites occurs in connexion with pyrrhotite and gold, especially at the rising town of Rossland, whose mines are already supplying large and important smelting works. Nearly one-half of the Canadian copper now comes from British Columbia.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the east for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metal is extracted.

Gold.—At the present time the chief gold-producing provinces of the Dominion are the Yukon region of the North-West Territories, British Columbia, Nova Scotia, and Ontario.

The Klondike gold fields‡ in the Yukon District of the North-West Territories show an increase of 290,276 ozs., the total yield being 774,069 ozs., or more than three-quarters of the output of the Dominion. The gold was obtained solely from alluvial deposits.

Next in importance is British Columbia, with a yield of 205,560 ozs. of gold in 1899. Its principal gold-mining regions are Kootenay, Cariboo, Omenica, and Cassiar. In the first are situated the important mines of Rossland, where the gold is found in connection with copper ore. The alluvial deposits which made the Cariboo district so famous about

* Woodford "British Solomon Islands Annual Report for 1897-8," *Colonial Reports*—Annual, No. 251.—London, 1898 [C. 9046-19].

† Obalski, *Chromic iron in the Province of Quebec*.—Department of Colonization and Mines, January, 1898.

‡ For official information about Klondike, see: McConnell "Preliminary Report on the Klondike Goldfields, Yukon District, Canada," *Geological Survey of Canada*. Ottawa, 1900.

CANADA—continued.

the year 1859 are very far from being exhausted, and are being worked by the hydraulic and other methods. Omenica and Cassiar form a link between Cariboo and Klondike.

Dredging the beds of rivers is being attempted in several places in the Province.

The gold of Nova Scotia is derived from free-milling quartz veins, and it is encouraging to note that the production of the province is increasing.

Ontario is not yet producing a large quantity of gold, though the labours of prospectors have proved the existence of auriferous veins over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east. The output from various stamp mills affords good grounds for believing that gold mining will become an important industry in Ontario.

Emery.—This mineral has lately been discovered near Raglan, in the counties of Hastings and Renfrew. It is being worked, and emery wheels made from it are already in the market.

Granite and Miscellaneous Building Stones.—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

Graphite.—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks.

Gypsum.—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occur in the form of spotlessly white alabaster. Ontario, likewise, produces gypsum.

Iron Ore.—Though endowed with large supplies of iron ore in many of its provinces, the Dominion of Canada is as yet a small producer, for its total output is considerably less than one-hundredth that of the United States.

Lead Ore.—The mineral resources of British Columbia are by no means confined to gold. This province is a large producer of argentiferous lead ore, and the new discoveries of the Kootenay district render it probable that the output will go on increasing.

Mercury.—The only cinnabar mine in the Dominion was opened a short time ago on Kamloops Lake in British Columbia, near the Canadian Pacific Railway.

Mica.—This mineral is beginning to be mined more extensively in various places. The "white mica" (muscovite) occurs in granite and felspar veins, whilst the "amber mica" (phlogopite) is associated with apatite in pyroxenic rocks.

Natural Gas.—The Lower Silurian rocks, when buried, yield areas containing natural gas in a few places, such as at Port Colborne and Kingsville, in Southern Ontario.

Nickel.—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The present supply could be very largely increased.

Petroleum.—The principal petroleum district at the present time is in Southern Ontario, and the value of the output forms an important item in the statistics of the Colony.

Phosphate of Lime.—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from Florida, prices have dropped, and working the Canadian apatite is no longer so profitable as it was.

Salt.—Thick beds of salt occur in Southern Ontario, in the Onondago division of the Silurian rocks. The brine is pumped up and evaporated.

Silver.—The lead ores of British Columbia are often highly argentiferous.

CANADA—continued.

The rich silver ores in the Thunder Bay district of the province of Ontario are not being largely worked at the present time.

Slate.—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.

TABLE 291.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1898 and 1899.*

Mineral or other product.	1898.†			1899.‡		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony ...	1,200	1,219	4,110	—	—	—
Arsenic ...	—	—	—	51	52	1,001
Asbestos ...	21,237	21,578	100,931	22,576	22,938	99,308
Baryta ...	1,004	1,020	1,137	643	653	905
Coal ...	3,725,520	3,785,305	1,689,633	4,076,779	4,142,201	1,857,546
Coke ...	78,214	79,469	58,767	90,018	91,462	71,922
Copper (fine, contained in ore).	7,923	8,050	438,695	6,731	6,839	545,613
Felspar ...	2,232	2,268	1,284	2,679	2,722	1,233
Fireclay ...	598	607	345	535	543	266
Flagstones ...	—	—	873	—	—	1,562
Gold (Fine) ...	ozs. 666,445	kil. 20,729	2,830,566	ozs. 1,018,214§	kil. 31,670	4,325,237
Granite ...	21,337	21,679	16,659	—	—	18,605
Graphite ...	—	—	2,815	1,089	1,106	3,325
Gravel and Sand ...	148,173	150,551	18,595	—	—	—
Grindstones ...	4,406	4,476	9,200	4,028	4,092	8,890
Gypsum ...	195,764	198,906	47,777	218,362	221,866	52,876
Iron ore... chromic ...	52,092	52,928	31,394	68,891	69,996	51,035
Lead ...	1,804	1,833	4,982	1,768	1,796	4,882
Lead ...	14,248	14,477	247,890	9,760	9,916	200,805
Limestone for flux in smelting iron ore.	30,280	30,766	6,401	47,502	48,264	9,383
Manganese ore...	45	46	329	275	279	814
Mineral water ...	galls. 555,000	litres 2,521,619	20,548	—	—	20,548
Mica ...	—	—	24,324	—	—	33,493
Natural gas ...	—	—	66,190	—	—	79,576
Nickel ...	2,463	2,503	374,145	2,564	2,605	424,899
Ochres ...	1,987	2,019	3,586	3,499	3,555	4,089
Petroleum ...	galls. 26,543,685	litres 120,600,119	218,167	galls. 28,299,950	litres 128,579,634	246,990
Phosphate of lime ...	654	665	753	2,679	2,722	3,699
Platinum ...	ozs. 100	kil. 3	308	ozs. 55	kilos. 2	172
Pyrites (Copper and Iron).	28,766	29,228	26,481	24,721	25,117	22,756
Quartz ...	254	258	117	—	—	—
Salt ...	51,020	51,839	51,090	50,978	51,796	48,189
Sand (moulding) ...	9,439	9,590	4,323	12,254	12,450	5,636
Silver (Fine) ...	ozs. 4,452,333	kilos. 138,483	532,999	ozs. 3,078,837	kilos. 95,762	376,925
Slate ...	—	—	8,382	—	—	6,864
Soapstone ...	362	368	205	402	408	403
Tripolite ...	908	922	3,423	—	—	—
Building materials :—						
Bricks ...	—	—	—	—	—	—
Building stone ...	—	—	—	—	—	—
Cement, natural ...	—	—	—	—	—	—
" Portland ...	—	—	—	—	—	—
Lime ...	—	—	1,034,974	—	—	1,123,005
Pottery ...	—	—	—	—	—	—
Sewer pipe ...	—	—	—	—	—	—
Terra cotta ...	—	—	—	—	—	—
Tiles ...	—	—	—	—	—	—
Total value ...	—	—	7,882,398	—	—	9,652,502

The progress of Canada as a mineral-producing country continues ; the total value of its metallic and non-metallic products in 1899 approached 10 millions sterling ; 10 years ago the corresponding figure was \$14,013,913, about 3 millions.

* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1898 and 1899.

† Revised figures.

‡ Preliminary Return, subject to revision.

§ Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

CANADA.—BRITISH COLUMBIA—*continued.*

TABLE 295.

DEATH-RATE FROM ACCIDENTS at COAL MINES during the Years 1898 and 1899.

1898.			1899.		
Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
Under-ground.	Above-ground.	Total	Under-ground.	Above-ground.	Total.
3.45	—	2.46	3.61	1.04	2.94

During the year 1899, thirteen persons were killed at metalliferous mines.

The Report of the Inspector of Metalliferous Mines* in British Columbia is unsatisfactory, because it does not give the number of persons employed; consequently no death-rate can be calculated for making a comparison with other countries.

The "Placer Mining Act," 1891, and the "Mineral Act," 1896, have lately been published, with the amendments made in 1898 and 1899.

NOVA SCOTIA.†

The Nova Scotian Legislature has passed a very wise Act, allowing tracts of land supposed to contain alluvial gold to be taken for a period of three months at almost nominal terms in order that persons may make practical tests, and thereby decide whether it is worth their while to secure the ground permanently.

TABLE 296.

PERSONS EMPLOYED at COAL MINES during the Years ended 30th September 1898 and 1899.

Year.	Under-ground.			Above-ground.			Construction.			Total.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1898	2,850	464	3,314	1,011	166	1,177	93	3	96	4,587
1899	3,531	555	4,086	1,234	180	1,414	105	7	112	5,612

The average numbers of persons employed at gold mines during the years ending 30th September 1898 and 1899 were 616 and 531 respectively.

TABLE 297.

QUANTITY of MINERALS produced during the Years ended 30th September 1898 and 1899.

Mineral.	Year ending 30th September 1898		Year ending 30th September 1899.	
	Quantity.		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Coal	2,281,454	2,318,066	2,642,333	2,684,736
Coke	42,000	42,674	55,484	56,374
Copper ore	—	—	400	406
Barytes	—	—	335	340
Gold	ozs. 31,104	kilos. 967	ozs. 27,772	kilos. 864
Gypsum (exported)	131,000	133,102	140,000	142,247
Iron ore	31,050	31,548	16,169	16,428
Limestone	24,000	24,385	32,000	32,514
Manganese ore	75	76	100	102
Tripoli and Silica	—	—	893	907

* Contained in the *Annual Report of the Minister of Mines for British Columbia*, 1899, p. 815.

† *Reports of the Department of Mines for Nova Scotia*, 1898 and 1899, Halifax.

TABLE 301.

SUMMARY OF DEATHS FROM ACCIDENTS IN MINES during the Years 1898 and 1899.

Kind of Mine.	Number of Persons Killed.		Deaths per 1,000 Persons Employed.	
	1898.	1899.*	1898.	1899.*
Copper	2		3.14	
Gold	2		3.45	
Silver	1		16.95	

QUEBEC.†

This Province employed in 1899 about 4,800 persons in mining and quarrying, of whom nearly one-fifth were engaged in getting asbestos, the most important mineral.

TABLE 302.

OUTPUT and VALUE of MINERALS during the Years 1898 and 1899.

Mineral.	1898.			1899.		
	Statute Tons.	Metric Tons.	Value.	Statute Tons.	Metric Tons.	Value.
Asbestos	20,549	20,579	£ 105,053	20,773	21,106	£ 123,028
Barytes	49	50	57	371	377	598
Chrome iron	1,805	1,834	5,137	1,768	1,796	4,288
Copper ore	35,666	36,259	29,565	39,028	39,654	33,300
Felspar	1,766	1,815	1,027	2,679	2,722	1,541
Flagstones	845	859	736	sq. yds. 4,000	sq. metres 3,344	719
Gold	ozs. 379	kilos. 11	1,336	ozs. 272	kilos. 8	1,010
Graphite	76	77	1,747	54	55	1,048
Iron ores	13,385	13,600	7,807	20,000	20,321	8,219
Mica	246	250	16,644	510	518	28,123
Ochre	1,179	1,189	2,692	1,277	1,297	2,938
Phosphate	777	789	1,228	1,138	1,156	1,882
Slate	3,964	3,113	7,680	2,021	2,053	6,189
Zinc and lead ores	1,300	1,321	4,500	350	356	2,517
Building materials...	—	—	158,630	—	—	213,080
Total value	—	—	343,839	—	—	428,480

* Figures for 1899 are not yet available.

† Obalski, *Report on the Mines of the Province of Quebec for the year 1899*, Department of Colonization and Mines, March 1900.

CAPE COLONY—continued.

TABLE 304.

QUANTITY and VALUE of MINERALS produced during the Years 1

Mineral.	1898.			Quantit
	Quantity.		Value.	
	Statute Tons.	Metric Tons.	£	Statute Tons.
Asbestos (exported)	149	151	2,037	—
Coal	171,301	174,050	119,000	186,299
Copper ore	36,822	37,413	310,636	34,848
Crocidolite (exported)	8	8	700	18
Diamonds	carats 3,270,917	kilos. 672	4,128,321	carats 2,507,647
Fireclay	1,240	1,260	Not stated.	1,260
Gold	ozs. 127	kilos. 4	444	ozs. 130
Salt, white	bushels 442,880 tons 11,850*	12,040	32,598†	bshl's. 434,300 tons 11,633*
Total value	—	—	4,593,736	—

TABLE 305.

DEATHS from ACCIDENTS during the Year 1899.

Class of Mine.	Number of Deaths.			Death-rate per 1,0	
	Under-ground.	Above-ground.	Total.	Under-ground.	Abo
Coal	7	—	7	2.75	
Copper ore	—	—	Not stated.	—	
Diamond (Kimberley Mines).	50	15	65	10.93	
Total for Coal and Diamond Mines.	57	15	72	8.00	

Kimberley Diamond Mines.‡

TABLE 306.

PERSONS EMPLOYED during the Years 1898 and 1899

Year.	Under-ground.			Above-ground.			White.
	White.	Coloured.	Total.	White.	Coloured.	Total.	
1898 ...	425.	4,040	4,465	1,565	6,253	7,818	1,990
1899 ...	399	4,177	4,576	1,529	6,574	8,103	1,920

* Estimated at 60 lbs. = 1 bushel.

† Estimated.

‡ Exclusive of output of Kimberley.

§ Reports of the Inspector of Mines for Kimberley.

CAPE COLONY—continued.

Kimberley Diamond Mines—continued.

Table 308—continued.

CAUSES of ACCIDENTS in 1898—continued.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Surface and Open Works.</i>							
Underground and débris ...	17	—	5	5	—	14	14
Tramways or by trucks ...	61	—	6	6	8	47	55
Falling down open works ...	1	—	—	—	1	—	1
Machinery	7	—	1	1	—	6	6
Use of bridge at washing plant.	1	—	2	2	—	1	1
Crushing	4	—	2	2	—	6	6
Miscellaneous	5	—	—	—	2	3	5
Total	96	—	16	16	11	77	88
Totals (above and below ground)	204	—	52	52	19	181	200

TABLE 308—continued.

CAUSES of ACCIDENTS in 1899.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Underground-rushes	2	—	7	7	—	—	—
Falls of ground	33	1	7	8	2	24	26
Falling down "passes"	2	—	2	2	—	—	—
Machinery	1	—	1	1	—	—	—
Falls from ladders... ..	5	—	—	—	—	5	5
Evolution of gas	2	—	—	—	2	—	2
Ground falling from side of shaft	1	—	1	1	—	1	1
Tramways or by trucks	9	—	—	—	1	8	9
Crushing	4	1	30	31	10	20	30
Miscellaneous	1	—	—	—	1	—	1
Total	60	2	48	50	16	58	74
<i>Surface and Open Works.</i>							
Falling down open works	2	—	1	1	1	—	1
Falls of ground and debris	31	—	9	9	—	24	24
Tramways or by trucks	39	—	2	2	3	36	39
Machinery	10	—	2	2	1	7	8
Crushing	6	—	1	1	2	5	7
Miscellaneous	6	—	—	—	—	7	7
Total	94	—	15	15	7	79	86
Totals (above and below ground)	154	2	63	65	23	137	160

CEYLON—continued.

TABLE 311.

DEATHS FROM ACCIDENTS at MINES and MINERAL WORKINGS during the Years 1896 and 1897.

Kind of Workings.	Under-ground.			Above-ground.			Total Below and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	11	—	11	1	—	1	12	1·16	·07	·49
Openworks...	—	—	—	1	1	2	2	—	·01	·01
Total for 1897.	11	—	11	2	1	3	14	·24	·01	·05
Total for previous year.	12	—	12	2	—	2	14	·29	·01	·05

Channel Islands.

The average number of persons employed each year in the stone quarrying industry of the Channel Islands is about 1,200.

TABLE 312.

QUANTITY and VALUE of STONE exported during the Years 1898 and 1899.*

Mineral and Islands where obtained.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
Guernsey and Jersey : Stone, dressed or rough (exported).	Statute Tons. 346,014	Metric Tons. 351,567	£ 190 796	Statute Tons. 319,861	Metric Tons. 324,994	£ 177,331

Christmas Island.†

This island possesses deposits of phosphate of lime which are rich enough to be of economic value. The phosphatic rock now being worked on a large scale is, in part at all events, a limestone altered into phosphorite by the percolation from overlying guano. The quantity of phosphorite available for export is exceedingly large.

* *Annual Statement of Trade of the United Kingdom for 1899*, p. 252.† Baxendale "Christmas and Cocos-Keeling Islands" *Colonial Reports*, Annual, No. 286. - London, 1900 [Cd.—3—9] and Andrews, *A Monograph of Christmas Island*, London, 1900, p. 290.

Cyprus.*

TABLE 313.

QUANTITY and VALUE of the MINERALS produced during the Financial Years 1897-8 and 1898-9.

Minerals.	1897-8.			1898-9.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper (exported)	19	19	483	22	22	497
Gypsum "	3,821	3,882	1,557	3,930	3,993	1,822
Salt "	1	1	2	Cwt. 4	—	1
Umber ...	2,863	2,909	960	980	996	502
Total value ...	—	—	3,002	—	—	2,822

In addition to these minerals, sandstone and limestone are quarried for building and other purposes ; but the quantities are unknown.

Federated Malay States.†

Gold.—Pahang has several mines which are working quartz veins ; by far the most important is the Raub Concession, which yields about 12,000 ozs. of gold annually.

Marble.—A marble quarry is being worked at Ipoh, in Perak.

Tin.—The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The ore is obtained almost exclusively from alluvial deposits worked as open quarries.

The output of Perak continues to decline, and in 1899 was 4,985 metric tons less than it was in 1895, when it reached its zenith of 24,249 metric tons.

The Resident General‡ ascribes the diminished output entirely to the want of labour.

Hydraulic mining has been largely introduced for the purpose of working tin deposits in the Kinta district of Perak, and near Seremban in Negri Sembilan.

A certain amount of vein mining is being carried on, and more particularly at the mines of the Pahang Corporation at Kuantan, Pahang, about 30,000 tons of crude tin ore are being stamped yearly.

The yield for 1898-1899 was 858 tons of black tin and averaged 2·8 per cent. of the stone crushed. The owners of the Rin Lode in Jelebu, Negri Sembilan, have erected machinery and have crushed a small quantity of stone which yielded about 3 per cent. of tin ore.

The total number of coolies employed at the mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1899 amounted to 130,962.

TABLE 314.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.

State.	1898.	1899.
Negri Sembilan	10,836	18,442
Pahang	1,975	2,000§
Perak	54,316	45,468||
Selangor	58,453	65,052
Total	125,580	130,962

* Blue Books for Cyprus for 1897-8 and 1898-9. Bellamy, "A description of the Salt-Lake of Larnaca in the Island of Cyprus." *Quart. Journ. Geol. Soc.*, Vol. LVI., 1900, p. 745.

† Official Return furnished by the Mines Department, Seremban, Negri Sembilan.

‡ Sir Frank Swettenham, *Annual Report on the Federated Malay States for the year 1899*, p. 2, par. 5.

§ Estimated.

|| Kinta District only.

FEDERATED MALAY STATES—*continued.*

TABLE 315.

SUMMARY of QUANTITY and VALUE of MINERALS produced in the four States during the Years 1898 and 1899.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper ore	20	20	(Not stated)	—	—	—
Gold	ozs. 23,726	kilos. 738	83,175	ozs. 18,295	kilos. 569	70,000
Tin*	39,576	40,211	2,829,684	38,353	38,969	4,482,941
Wolfram (exported)	—	—	—	2	2	76

TABLE 316.

NEGRI SEMBILAN.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin*	2,746	2,790	196,378	3,410	3,465	411,260
Wolfram (exported)	—	—	—	2	2	76

TABLE 317.

PAHANG.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper ore	20	20	(Not stated)	—	—	—
Gold	ozs. 22,526	kilos. 701	80,078	ozs. 18,295	kilos. 569	70,000
Tin*	631	641	45,113	803	816	93,231

TABLE 318.

PERAK.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold	ozs. 1,200†	kilos. 37	3,097	—	—	—
Tin*	19,703	20,019	1,408,770	18,960	19,264	2,237,765

* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

† Output from January to August only.

FEDERATED MALAY STATES—continued.

TABLE 319.

SELANGOR.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin*	16,496	16,761	1,179,423	15,180	15,424	1,740,685

TABLE 320.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.

State.	Number of persons killed.		Death-rate per 1,000 persons employed.	
	1898.	1899.	1898.	1899.
Negri Sembilan	5	6	·46	·33
Pahang	11†	†	†	†
Perak	25	†	·46	†
Selangor... ..	†	16	†	·25.
Total	41§	22¶	·46||	·26¶

Gold Coast.**

The name of the Colony points to its mineral resources. The principal gold mines are situated in Wassaw and Appolonia in the Western District. The gold deposits now being worked are beds of conglomerate similar in character to those which are yielding such enormous quantities of precious metal in the Transvaal. When the railway from the coast is completed to the mining districts, a much greater development of the mineral wealth of the Gold Coast may be confidently expected.

The ores of silver, mercury, lead, tin, copper, and iron have been found, and quarries of sandstone abound throughout the settlement.

TABLE 321.

PERSONS EMPLOYED at GOLD MINES during the Year 1898.

Under-ground.	Above-ground.			Total.
Males.	Males.	Females.	Total.	
881	1,811	221	2,032	2,913

* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore melted at Singapore and elsewhere.

† Not ascertainable.

‡ Including accidents to woodcutters.

§ Excluding Selangor.

¶ " " and Pahang.

|| " " Pahang and Perak.

** Official Return furnished by the Colonial Secretary of Gold Coast Colony, *Blue Books for Gold Coast for 1898 and 1899*.—Smith, "Gold Coast Annual Report for 1897," *Colonial Reports*, Annual, No. 249, London, 1898 [C. 9406-17], p. 13, and No. 271 [C. 9498-5], 1899, p. 12.—Irvine, "The Gold Mines of West Africa," *Jour. Soc. Arts.*, Vol. XLVII, p. 205.

GOLD COAST—*continued.*

The quantity and value of gold exported in 1898 and in 1899 were as follows :—

TABLE 322.

Metal.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
Gold	Ozs. 17,733	Kilos. 552	£ 63,838	Ozs. 14,250	Kilos. 443	£ 51,300

The amount of gold obtained from the mines which furnished the returns of persons employed was 10,458 ozs., worth £41,042.

TABLE 323.

DEATHS FROM ACCIDENTS at GOLD MINES during the Year 1898.

Under-ground.	Above-ground.	Total.	Death-rate per 1,000 persons employed.		
			Under-ground.	Above-ground.	Total.
1	—	1	1.13	—	.34

India.*

The three most important minerals worked are :—coal, gold ore, and salt.

Coal.—The total output of coal in 1899 was 4,937,160 tons. About three-quarters of the coal produced in India comes from Bengal; the remainder is obtained from the North-West Provinces and Oudh, Punjab, Central Provinces, Assam, Burma, Central India, the Nizám's Dominions, and Baluchistan.

The resources of India as a coal-producing country are immense, very large areas, rich in mineral fuel, have not yet been touched. The coal of Peninsular India is of Lower Gondwana (Permo-Triassic) age, that of Extra-Peninsular India is Cretaceous and Tertiary. The principal coalfields may be classed under the three following heads : (1) Eastern; (2) Central; and (3) Southern.

(1) In this group are the Karharbari (Giridih), Raniganj, Barrakar, and Jherria fields.

(2) The second group includes the North and South Karanpura, the Daltonganj, Hutar, Aurunga, Singowli, Sahagpur, Umaria, Mophani, and Warora fields.

(3) The most important coalfield in this group is the Singareni.

Cobalt.—In his report for 1896 Mr. Grundy states that cobalt mining is an industry of some importance in Jeypore.

Gems and Precious Stones.—Upper Burma has long been famous for its rubies, and the mining industry has just entered the profitable stage. In addition, Upper Burma yields amber, jade, and tourmaline. The output of diamonds from Bundelkhand, Central India, is insignificant.

Gold.—The most important mineral industry in India is gold mining; small quantities of the precious metal are washed from river sands in very many parts of the country, but the total amount so obtained is insignificant with the output of the quartz veins of Mysore. The value of the gold obtained is nearly double that of the coal.

The 22 gold mines at work employ 21,603 persons, of whom 11,736 work under-ground. The gold produced in 1899 was 448,071 ounces (13,936 kilos.), of which more than one-third came from the Mysore Gold Mine, and nearly one-third from the Champion Reef Gold Mine.

Iron.—The various ores of iron, viz., magnetite, hematite, limonite, and claystone, occur abundantly, and are smelted on a small scale by the aid of charcoal all over India.

* India Office—*Statement exhibiting the moral and material progress and condition of India during the year 1898-99.* London, 1900; and : Blyth, *Notes on the collection exhibited by the Geological Survey of India.* Paris, 1900.

INDIA—continued.

Barrakar, in Bengal, is the only place where iron-smelting is carried on by modern methods on a comparatively large scale. The output in 1899 was 19,631 tons of pig-iron. At Barrakar the conditions are extremely favourable, for coal, iron ore, and limestone are found in close proximity.

Manganese Ore.—The chief deposits of manganese ore are near Jabalpur, in the Central Provinces, and in the Vizagapatam district, Madras.

Mica.*—Quarrying mica is an industry of some importance, for the number of persons employed at the Hazaribagh Quarries in Bengal was more than 5,000.

Petroleum.—The oil wells in Upper Burma, where petroleum has been obtained for more than 2,000 years, furnish most of this mineral; and the output of the province in 1898 was slightly less than that of the previous year.

Salt.—The sources of the salt supply are: (a) rock-salt mines of the Punjab, Kohat, and Mandi State; (b) lakes and wells of Rajputana, wells of the Punjab, and Upper Burma; (c) evaporation of sea water in Bombay, Sind, Madras, and Lower Burma.

Saltpetre.†—The nitre of India is obtained from a natural efflorescence from the soil, especially in the province of Behar. The crude earth is purified by solution, filtration, evaporation, and crystallization.

The area over which saltpetre is manufactured is estimated at 232,314 square miles; and according to the census of 1891 there were 119,558 saltpetre workers and sellers in India.

Slate.—This mineral is quarried at Monghyr, Bengal, and in the Kangra Valley, Rewari, Punjab. It is used for roofing, paving, &c.

Soda Salts.—The carbonate and the sulphate of soda are manufactured in very many districts of India from the surface soil or from saline efflorescences, in like manner to saltpetre.

TABLE 324.
PERSONS EMPLOYED in and about MINES in INDIA for the Years ending
31st December 1898 and 1899.‡

Kind of Mines.	Under-ground.			Above-ground.			Total Below and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1898.							
Alum	1,200	—	1,200	300	—	300	1,500
Coal	33,153	11,051	44,204	11,900	6,801	18,701	62,905
Cobalt ore	1,500	—	1,500	125	150	275	1,775
Copper ore	1,721	—	1,721	100	—	100	1,821
Gold	12,810	—	12,810	9,326	1,522	10,848	23,658
Gypsum	—	—	—	200	52	252	252
Iron ore	1,171	730	1,901	94	35	129	2,030
Manganese ore	—	—	—	2,100	1,430	3,530	3,530
Mica	11,748	980	12,728	13,490	5,141	18,631	31,359
Plumbago	262	—	262	80	45	125	387
Rubies, sapphires, spinels, and garnets.	—	—	—	—	—	—	(Not stated.)
Salt	693	549	1,242	93	10	103	1,345
Stone, limestone, slate, &c.	121	10	131	809	179	988	1,119
Total	64,379	13,320	77,699	38,617	15,365	53,982	131,681
1899.							
Coal	38,894	12,789	51,683	14,669	7,933	22,602	74,285
Gold	13,230	—	13,230	8,981	1,835	10,816	24,046
Manganese Ore	—	—	—	2,917	1,863	4,780	4,780
Mica	2,154	202	2,356	4,649	4,261	8,910	11,266
Plumbago	240	—	240	459	362	821	1,061
Salt	787	588	1,375	98	10	108	1,483
Stone, &c.	30	7	37	1,191	802	1,993	2,030
Total	55,335	13,586	68,921	32,964	17,066	50,030	118,951

* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 49.

† *Ibidem*, p. 54.

‡ Official Return furnished by Mr. James Grundy, the Inspector of Mines for India.

§ Including some persons employed at copper mines.

|| Corrected figures supplied by the Officiating Inspector of Mines for India.

¶ Returns incomplete.

INDIA—continued.

TABLE 325.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1898 and 1899.*

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	Rs.	Statute Tons.	Metric Tons.	Rs.
Alum	750	762	63,000	3½	3½	469
Amber	owts. 114	kilos. 5,791	15,915	owts. 20	kilos. 1,016	2,270
Asbestos	owts. 5	kilos. 254	38	1	1	10
Clay	545,424	554,177	591,429	2,002,611	2,034,748	2,015,559
Do.	419,973	428,713	(Not stated)	900	914	(Not stated)
Do.	(Not stated)	—	22,060	(Not stated)	—	29,890
Coal	4,605,528	4,679,436	14,309,332	4,937,160	5,016,390	15,539,874
Copper ores	—	—	—	51	52	1,025
Corundum	—	—	—	241	245	4,068
Do.	254	258	(Not stated)	—	—	—
Diamonds	carats 170	grams 35	10,873	carats 124	grams 25	8,011
Garnets	—	—	—	owts. 1,251	kilos. 63,554	50,000
Gold	oss. 410,678	kilos. 12,774	24,127,560	oss. 457,020	14,215	25,846,229
Granite	350,255	355,876	501,256	801,229	814,087	548,778
Do.	443,181	450,293	(Not stated)	2,094	2,128	(Not stated)
Gravel and rubble	53,271	54,126	40,771	64,967	66,010	42,730
Do. do.	21,682	22,030	(Not stated)	—	—	—
Gypsum	8,258	8,391	4,640	6,443	6,546	2,370
Iron ore	49,763	50,562	187,617	60,725	61,699	185,373
Jade	1,938	1,969	217,884	1,111	1,129	42,048
Laterite	581,413	590,743	544,108	6,009,663	6,106,104	1,975,304
Do.	5,495,047	5,583,229	(Not stated)	—	—	—
Limestone	1,134,245	1,152,447	858,221	2,154,513	2,189,088	1,487,166
Do.	760,024	772,221	(Not stated)	—	—	—
Manganese ore	60,449	61,419	483,600	87,126	88,524	261,378
Mica	274½	279	225,540	620½	630	909,514
Do.	151	153	(Not stated)	—	—	—
Petroleum	gals. 18,973,878	litres 86,207,018	1,018,461	gals. 32,934,007	litres 149,634,277	1,885,259
Plumbago	22	22	(Not stated)	1,524	1,548	23,300
Rubies	(Not stated)	—	869,252	(Not stated)	—	1,363,972
Salt	986,172	1,001,999	5,871,534	920,669	935,444	5,055,050
Saltpetre	11,518	11,703	1,610,250	11,216	11,396	1,635,165
Sandstone	412,413	419,031	573,245	938,993	954,062	533,387
Do.	743,546	755,478	(Not stated)	115,140	116,988	(Not stated)
Slabstone	(Not stated)	—	2,960	—	—	—
Slate	19,612	19,927	43,120	25,948	26,364	53,436
Do.	6,918	7,029	(Not stated)	9	9	(Not stated)
Soapstone	176	179	290	181	184	295
Soapstone	1,496	1,520	6,092	609	619	20,313
Do.	227	231	(Not stated)	116	118	(Not stated)
Do.	(Not stated)	—	8,113	(Not stated)	—	130
Stone, miscellaneous	62,851	63,860	60,090	107,269	108,980	39,753
Do. do.	22,633	22,996	(Not stated)	cubic ft. 44,121	cubic metres 1,249	3,592
Tin ore	39	40	38,288	49	50	71,949
Trap	79,019	80,287	49,856	353,320	358,990	1,022,819
Do.	47,725	48,491	(Not stated)	—	—	—
Tourmaline	owt. ½	kilos. 25	5,390	—	—	—

* Government of India, Department of Revenue and Agriculture. *Statistics of Mineral Production in India 1890 to 1899*, Calcutta, 1900.

INDIA—continued.

TABLE 326.

OUTPUT and VALUE of MINERALS, classified according to the PROVINCES or STATES, for the Years 1898 and 1899.*

Mineral and Province or State where wrought.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
INDIA.						
<i>Ajmere-Merwara.</i>	Statute Tons.	Metric Tons.	Rupees.†	Statute Tons.	Metric Tons.	Rupees.†
Clay	2,848	2,894	240	1,665	1,692	142
Granite... ..	16,470	16,734	3,286	12,325	12,523	2,458
Limestone	2,260	2,296	765	775	787	268
Sandstone	8,324	8,458	4,179	5,644	5,734	2,698
Stone, miscellaneous	71	72	575	83	84	656
Total value in Rupees ...	—	—	9,045	—	—	6,222
" " in £ sterling	—	—	£603	—	—	£415
<i>Assam.</i>						
Coal	200,329	203,544	1,392,734	225,623	229,244	1,573,712
Limestone	62,643	63,648	148,211	102,255	103,896	162,499
Petroleum	gals. 547,965	litres 2,489,656	57,681	gals. 623,372	litres 2,832,265	65,816
Total value in Rupees ...	—	—	1,598,626	—	—	1,802,027
" " in £ sterling	—	—	£106,575	—	—	£120,135
<i>Bengal.</i>						
Clay	21,910	22,262	24,916	60,000	60,963	66,000
Coal	3,622,090	3,680,216	9,687,250	3,882,930	3,945,242	10,489,016
Granite	36,298	36,880	7,493	49,000	49,786	70,000
Gravel and rubble	27,428	27,868	20,169	47,000	47,754	32,000
" " " " " " " " " "	21,682	22,030	(Not stated)	—	—	—
Iron ore	41,854	42,526	105,085	52,000	52,834	95,000
Laterite	137,886	140,099	63,135	72,000	73,155	33,000
Limestone	118,521	120,423	92,579	144,000	146,311	133,000
Mica	267	271	225,064	356	362	307,000
Saltpetre	184,885	187,852	1,393,040	170,000	172,728	1,377,590
Sandstone	205,303	208,598	306,403	140,000	142,247	205,000
Slate	—	—	—	1,052	1,069	2,000
Soapstone	35	36	(Not stated)	45	46	(Not stated)
Stone, miscellaneous	2,574	2,615	(Not stated)	—	—	—
Trap	40,371	41,019	"	124,000	125,990	900,000
Total value in Rupees ...	—	—	—	—	—	—
" " in £ sterling	—	—	—	—	—	—
<i>Berar.</i>						
Clay	528	536	264	534	543	396
Laterite	740	752	370	920	935	460
Limestone	9,339	9,489	6,728	27,233	27,670	12,563
Stone, miscellaneous	615	625	370	—	—	—
Trap	78,969	80,236	49,426	221,860	225,420	121,467
Total value in Rupees ...	—	—	57,158	—	—	134,886
" " in £ sterling	—	—	£3,811	—	—	£8,992
<i>Coorg.</i>						
Clay	800	813	(Not stated)	900	914	(Not stated)
Granite	9,472	9,624	28,416	17,943	18,231	53,829
Laterite	190	193	190	459	466	459
Total value in Rupees ...	—	—	—	—	—	—
" " in £ sterling	—	—	—	—	—	—

* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India 1890 to 1899* Madras, 1900.

† The value of the rupee has been calculated at £1 = 15 rupees.

INDIA—continued.

OUTPUT and VALUE of MINERALS, classified according to PROVINCES or STATES, for the Years 1898 and 1899—continued.

Mineral and Province or State where wrought.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
INDIA—cont.						
Madras.	Statute Tons.	Metric Tons.	Rupees.	Statute Tons.	Metric Tons.	Rupees.
Clay	419,173	425,900	(Not stated)	620,228	630,181	801,432
Corundum	160	163	"	60	61	2,258
Gold	ozs. 2,854	kilos. 89	164,904	ozs. 325	kilos. 10	18,920
Granite	440,707	447,779	(Not stated)	530,223	538,732	120,244
Iron ore	1,492	1,516	1,391	1,149	1,167	2,890
Laterite	5,495,047	5,583,229	(Not stated)	5,492,151	5,580,288	1,402,742
Limestone	760,024	772,221	"	693,369	704,496	495,172
Manganese ore	60,449	61,419	483,600*	87,126	88,524	261,378
Mica	151	153	(Not stated)	262	266	602,304
Plumbago	22	22	"	1,521	1,545	23,300
Salt	251,875	255,917	1,455,160	268,962	273,278	1,443,820
Saltpetre	34,588	35,143	172,730	40,553	41,204	198,050
Sandstone	618,287	628,209	(Not stated)	630,763	640,885	117,613
Slate	6,918	7,029	"	6,982	7,094	15,600
Soapstone	119	121	"	103	105	4,900
Stone, miscellaneous	20,059	20,331	"	70,194	71,320	8,604
Trap	7,354	7,472	"	7,205	7,321	592
Total value in Rupees ...	—	—	—	—	—	5,519,819
" " in £ sterling	—	—	—	—	—	£367,988
N.W. Provinces and Oudh.						
Gold	(Not stated)	—	(Not stated)	—	—	—
Granite	2,474	2,513	"	2,094	2,128	(Not stated)
Limestone	650,079	660,511	232,005	908,215	922,789	329,766
Sandstone	125,259	127,269	(Not stated)	101,404	103,031	(Not stated)
Slate	—	—	—	9	9	"
Bombay, including Sindh.						
Laterite	13	13	1,300	—	—	—
Salt	355,814	361,524	1,067,364	379,550	385,641	1,291,540
Burma.						
Amber	cwt. 114	kilos. 5,791	15,915	cwt. 20	kilos. 1,016	2,270
Clay	260,589	264,771	273,413	975,265	990,916	785,220
Coal	6,975	7,087	45,337	8,105	8,235	52,682
Gold	—	—	—	ozs. 1,198	kilos. 37	65,798
Granite	2,484	2,524	2,542	4,663	4,738	6,257
Gravel and rubble	25,843	26,258	20,602	17,967	18,255	10,730
Iron ore	180	183	745	180	183	791
Jade	97	98	217,884	56	57	42,048
Laterite	171,333	174,082	258,301	168,888	171,090	315,853
Limestone	18,487	18,783	29,120	17,196	17,472	64,081
Mica	54	54	276	—	—	—
Petroleum	gals. 18,424,403	litres 83,710,487	960,640	gals. 32,309,531	litres 146,796,997	1,819,307
Plumbago	—	—	—	3	3	(Not stated)
Rubies	(Not stated)	—	869,252	(Not stated)	—	1,363,972
Salt	18,223	18,515	812,910	23,240	23,613	676,460
Sandstone	31,714	32,223	67,005	14,997	15,238	60,915
Soapstone	15	15	7,995	9	9	2,200
Soapsand	176	179	290	181	184	295
Tin ore	39	40	38,288	49	50	71,949
Tourmaline	cwts. 4	kilos. 25	5,390	—	—	—
Total value in Rupees ...	—	—	3,625,905	—	—	5,340,828
" " in £ sterling	—	—	£241,727	—	—	£356,055

* Estimated from the value exported.

~~TABLE 32.~~

~~TABLE 32.~~

~~Summary of Deaths from Accidents in Mines and Open Workings during the Year 1898 and 1899.~~

Name of Mine or Working.	1898.			1899.		
	Number of Deaths.			Number of Deaths.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Total	24	1	25	23	5	28
Coal	24	1	25	22	7	29
Wheat	—	—	—	3	—	3
Grain	—	—	—	—	—	—
Stone, etc. .. .	—	—	—	—	1	1
Total	24	1	25	26	13	39

TABLE 33.

DEATH-RATE FROM ACCIDENTS IN MINES AND OPEN WORKINGS during the Year—
1898 AND 1899.

Name of Mine or Working.	1898.			1899.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Coal	1.7	.45	.63	1.80	.22	1.32
Wheat	4.22	.55	2.54	3.33	.65	2.12
Grain .. .. .	.06	.06	.06	†	—	†
Stone, etc. .. .	—	9.71	.74	—	—	—
Total	—	—	—	—	.50	.49
Total	1.15	.31	.80	†	†	†

Notes.—† Not to be laid up as these low figures, as Mr. Grundy is of opinion that his lists of accidents are limited as the returns of persons employed are not complete.

NATAL—continued.

TABLE 331.

QUANTITY AND VALUE of COAL and GOLD produced during the Years 1897 and 1898.

		1897.			1898.		
		Quantity.		Value.	Quantity.		Value.
		Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	... ..	243,960	247,875	121,980	387,811	394,034	75,015
Gold	... ..	ozs. 97	kilos. 3	340	ozs. 17	kilo. 1	60

TABLE 332.

DEATHS from ACCIDENTS at COAL PRODUCING MINES during the Years 1897 and 1898.

Year.	Below-ground.			Above-ground.			Total Below-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1897	7	—	7	—	—	—	7	4.48
1898	9	—	9	—	—	—	9	3.30

Newfoundland.*

Newfoundland has three important mineral exports, viz. : copper ore and regulus, iron ore and iron pyrites.

Copper Ore.—The mine at Tilt Cove is by far the largest producer.

Iron Ore.—The valuable deposits of red hæmatite at Bell Island, Conception Bay, are being mined on a large scale and shipped to Nova Scotia.

Iron Pyrites.—This mineral has been obtained principally from Pilley's Island, Notre Dame Bay.

* Report of the Mineral Statistics for 1899, by J. P. Howley, Director of Geological Survey of Newfoundland, 1900.

NEW SOUTH WALES—continued.

Following the lead of New Zealand, dredging for gold has been commenced in South Wales.

Silver and lead.—The silver and lead mining of the Colony is practically concentrated at Broken Hill, in the Albert Mining District.

The growing importance of dredging as a method of extracting gold from the rivers and lakes, or land contiguous thereto, is evidenced by the passing of the "and Mineral Dredging Act, 1899" [Act No. 44, 1899]. It gives the Governor power to grant and cancel dredging leases, to establish the general conditions which have been observed by lessees, and to make regulations for proper working and the prevention of accidents.

TABLE 334.

PERSONS EMPLOYED at all MINES during the Years 1898 and 1899.*

Kind of Mines.	1898.			1899.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Coal	8,192	2,066	10,258	8,217	2,122	10,339
Gold { alluvial	—	—	8,303†	—	—	8,303
{ quartz	—	—	11,616	—	—	11,616
Shale	197	64	261	141	43	184
Silver	—	—	6,396	—	—	6,396
Other mines	—	—	3,996	—	—	3,996
Total	—	—	40,830	—	—	42,830

TABLE 335.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite	2,941	2,988	8,823	921	936	2,863
Antimony and Antimony ore	82	83	916	326	331	3,311
Bismuth	29	29	4,615	16	16	2,424
Chrome	2,111	2,145	6,301	5,243	5,327	16,338
Coal	4,706,251	4,781,775	1,271,832	4,597,028	4,670,799	1,271,832
Cobalt	117	119	560	190	193	560
Coke	82,222	83,541	64,135	96,530	98,079	64,135
Copper (ingots)	5,654	5,745	280,048	5,978	6,079	280,048
" (ore and regulus)	178	181	839	—	—	839
Diamonds	carats 16,493	grams 3,387	6,060	carats 25,874	grams 5,331	6,060
Fireclay	14	14	32	27	27	32
Gold	ozs. 340,493	kilos. 10,590	1,244,330	ozs. 496,196	kilos. 15,151	1,244,330
Iron stone flux¶	—	—	—	10,521	10,631	—
Iron, oxide of	392	398	832	396	399	832
Lead (pig)	1,718	1,746	19,282	3,268	3,301	19,282
" (carbonate and chloride)	—	—	—	1,551	1,567	—
Limestone (flux)	9,253	9,401	5,783	1,000	1,016	5,783
Manganese	1	1	5	—	—	5
Oil shale	29,689	30,165	31,834	36,719	37,295	31,834
Opal	—	—	80,000	—	—	80,000
Platinum	ozs. 1,250	kilos. 39	2,062	ozs. 638	kilos. 19	2,062
Silver (ingots and matte)	ozs. 533,059	kilos. 16,580	59,278	ozs. 692,036	kilos. 21,451	59,278
Silver lead and ore|| ... ..	398,569	404,065	1,644,777	444,627	451,129	1,644,777
Tin (ingots)	894	908	60,565	827	841	60,565
" (ore)	1	1	35	—	—	35
Zinc ore	38,941	39,566	28,941	49,879	50,600	28,941
Sundry minerals (including building stone).	—	—	2,863	—	—	2,863
Total value	—	—	4,824,748	—	—	4,824,748

* Annual Report of the Department of Mines and Agriculture for 1898, pp. 65 and 90; and for 1899, pp. 65 and 90.

† Including 864 Chinese.

‡ 811

§ Annual Report of the Department of Mines and Agriculture for 1898, pp. 24 and 82, and for 1899, pp. 24 and 82.

|| As the bulk of the silver is exported in the form of silver-lead, the quantity of fine silver contained therein is an approximation. It is stated in the Report of the Department of Mines (p. 84) that 13,091,523 lbs. of silver were won at some of the principal mines in the Colony during the year 1899.

¶ Used for metallurgical works.

New Zealand.*

The three important minerals worked in New Zealand are coal, gold, and kauri gum.

Coal.—160 collieries were at work in 1899. The largest are on the west coast of the Middle Island; the most important belong to the Westport Coal Company, Limited, with an output of 327,931 tons, or more than one-third of 975,234 tons, the entire output of the Colony.

Gold.—Gold is obtained in various parts of the Islands, and the precious metal is extracted from ordinary alluvial diggings by hydraulic mining, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this method of extraction is rapidly coming into favour. On the 31st March 1900, 81 dredges were at work and 101 under construction in Otago and Southland, and 4 at work and 70 under construction in the Marlborough and West Coast districts.

Kauri Gum.—Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives, and the price paid for the semi-fossil resin is so great that its value considerably exceeds the total value of the coal produced.

TABLE 339.

PERSONS EMPLOYED at COAL MINES during the years 1898 and 1899.†

	Year.	Below-ground.	Above-ground.	Total.
	1898	1,447	556	2,003
	1899	1,599	554	2,153

TABLE 340.

PERSONS EMPLOYED at GOLD MINES during the Years ended 31st March 1899 and 1900.‡

Mining District.	Alluvial Miners.		Quartz Miners.		Total.		Grand Total.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1900.	1899.
Auckland	—	—	3,458	—	3,458	—	3,458	3,599
Marlborough	131	—	12	—	143	—	143	127
Nelson	1,291	367	766	—	2,057	367	2,424	2,756
Westland	1,994	437	28	—	2,022	437	2,459	2,377
Otago	3,496	912	399	—	3,895	912	4,807	4,813
Total	6,912	1,716	4,663	—	11,575	1,716	13,291	13,672

* Hon. James McGowan, *New Zealand, Mines Statement*, Wellington, 1900.

† *Inspection of Coal Mines Reports*. C.—3b, and C.—3a, Wellington, 1899 and 1900.

‡ Hon. James McGowan, *New Zealand, Mines Statement*, Wellington, 1900. C.—2, p. 16.

Nigeria.

About the mineral wealth of Nigeria little can be said definitely at the present time. The region is known to contain deposits of antimony, silver, and tin.

North Borneo. (See BRITISH BORNEO.)

Nova Scotia. (See CANADA.)

Ontario. (See CANADA.)

Queensland.*

The mineral products of Queensland are very numerous, but gold is the only one of importance at the present day ; for, in spite of the large area of coal-bearing rocks, the total yearly output of coal is only about 494,000 tons.

Gold.—Queensland is blessed with many goldfields, the positions of which are indicated on a map appended to the “Annual Report of the Under-Secretary for Mines” for 1899. The most important is Charters Towers, which produced last year 511,021 ounces of gold. The Mount Morgan field comes next with nearly 184,000 ounces, of which 172,389 stand to the credit of the famous mine which gives the field its name.

TABLE 343.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.

Kind of Mines.					1898.	1899.
Coal	...	...	...	...	1,278	1,142
Gold	{ alluvial	...	...	...	3,889†	2,614‡
	{ vein	...	...	...	7,383	7,144
Other mines	...	...	...	...	863	2,903
Total					13,413	13,803

* Annual Report of the Under Secretary for Mines for 1899. Brisbane, 1900.

† Including 890 Chinese.

‡ „ 710 „

QUEENSLAND—continued.

TABLE 344.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Antimony Ore	—	—	—	40	41	200
Bismuth ore	8	8	700	2	2	494
Coal	407,934	414,480	150,493	494,009	501,936	175,715
Copper ore	62	63	2,166	161	164	9,498
Gold	oss. 920,048	kilos. 28,617	2,750,349	oss. 946,894	kilos. 29,452	2,838,119
Lead	248	252	2,480	56	57	780
Manganese ore	67	68	251	735	747	2,881
Opal	—	—	6,645	—	—	9,000
Salt (exported)*	5	5	21	—	—	—
Silver	oss. 104,021	kilos. 3,235	10,588	oss. 145,325	kilos. 4,520	15,671
Stone* :—						
Bluestone	64,850	65,891	5,962	79,856	81,137	10,574
Granite	6,985	7,097	1,397	—	—	—
Limestone	1,600	1,628	800	—	—	—
Porphyry	59,688	60,646	7,502	72,871	74,040	7,598
Sandstone	7,022	7,135	2,954	9,608	9,762	4,297
Tin ore (dressed)	1,025	1,041	36,508	1,308	1,329	77,302
Wolfram ore	78	79	2,540	259	263	10,060
Total value	—	—	2,981,356	—	—	3,162,084

TABLE 345.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.

Kind of Mines.	1898.		1899.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	—	—	1	·87
Gold	18	1·60	18	1·84
Other mines	1	1·59	—	—
Total	19	1·42	19	1·38

* Statistics of Queensland for 1899, Brisbane, 1900.

Redonda* (Leeward Islands).

The number of persons employed in obtaining phosphate of alumina in 1897 was about 21, and in 1898 about 29.

TABLE 346.

QUANTITY and VALUE of MINERAL produced during the Years 1897 and 1898.

Mineral.	1897.			1898.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Phosphate of alumina ...	799	812	1,105	738	750	945

Owing to the violence of the cyclone which passed over the West Indies on the 7th August, 1899, all records and documents relating to the workings were totally destroyed.

Rhodesia.

Coal.—The coal resources are being tested in some places by sinking and driving, and the results are promising.

■ *Gold.*—Gold mining is making satisfactory progress in the Colony. The output for 1899 was 65,304 ozs.

TABLE 347.

OUTPUT of GOLD.†

	1898.‡		1899.	
	Ozs.	Kilos.	Ozs.	Kilos.
	18,085	562	65,304	2,031

Sarawak. (See BRITISH BORNEO.)**Sombrero.** (LEEWARD ISLANDS.)

The phosphate of lime quarry at Sombrero is no longer worked.

* Information furnished by the London Phosphate Syndicate Ltd.

† Report of the Rhodesia Chamber of Mines furnished by the British South Africa Co.

‡ Output for the four months, September to December, only.

SOUTH AUSTRALIA—*continued.*

According to the Government Resident's Report there was one fatal accident at gold mines in the Northern Territory during the year 1899.

Straits Settlements.

Apparently there is little, if any, mining in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore; but the adjacent Federated Malay States are great producers of tin ore (*see* p. 310).

Tasmania.*

Nature, which has done so much for Tasmania in endowing it with mineral treasures, has nevertheless put great difficulties in the way of their discovery, for the prospector has to make his way through a very rugged and densely-wooded country, which in places becomes almost impenetrable from the tangled undergrowth. It is no wonder therefore that Tasmania has lagged behind the Australian Colonies and New Zealand as a mineral producer. Now that its resources are gradually becoming known and that its railroads are being extended, mining is proceeding apace and with satisfactory results.

Tasmania is producing a little coal, but its importance at the present moment as a mineral country is due to its great deposits of the ores of copper, lead, gold, and tin.

The Official Handbook of Tasmania† contains a useful map showing the principal mineral districts.

Coal.—The output is at present insignificant.

Copper.—Mount Lyell Mine in the West Coast district is the great producer of copper, and the ore is further made valuable by containing gold and silver. The Colony, which only began to export in 1896, sent away 4,955 tons of metal last year.

Gold.—In addition to the gold obtained from the copper ore of Mount Lyell and its neighbours, there are numerous veins of gold-bearing quartz. The Tasmania Mine, Beaconsfield, is the largest producer.

Lead.—The Zeehan district boasts of many rich deposits of silver-bearing lead ore, and Tasmania is already producing about one half as much lead and more than fourteen times as much silver as the United Kingdom.

Tin.—As in the case of its competitor Cornwall, it was tin ore which first drew special attention to the mineral wealth of the country. For many years tin was the principal mineral export of Tasmania; though still an important product, its value is now considerably exceeded by that of the gold and argentiferous lead. Mount Bischoff continues to be one of the largest tin mines in the world.

TABLE 350.

PERSONS EMPLOYED at the MINES during the Years ended 30th June 1898-99 and 1899-1900.

	1898-99.	1899-1900.†
	6,180	

* *Report of the Secretary for Mines, 1898-9, Hobart, 1899.*—"Tasmania and its Mineral Wealth." Special edition of the *Australian Mining Standard*, 1st July 1898.—Harcourt-Smith, *The Progress of the Mineral Industry of Tasmania* for the Quarter ending 31st December 1898, Hobart, 1899.

† Launceston, 1899.

‡ Figures are not yet available.

TASMANIA—continued.

TABLE 351.

QUANTITY and VALUE of the MINERALS produced during the Years ended 30th June 1898-99 and 1899-1900.

Description of Mineral.	1898-99.			1899-1900.†		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	44,141	44,849	37,915			
Copper (blister) }	6,079	6,177	467,268			
" ore }	1,889	1,919	31,985			
Gold	oss. 84,189	kilos. 2,819	331,414			
Iron ore	1,633	1,659	1,576			
Silver Lead Ore	24,203†	24,591	217,735			
Tin	2,006	2,038	189,847			
Total value	—	—	1,277,740			

TABLE 352.

DEATHS from ACCIDENTS at MINES during the Years ended 30th June 1898-99 and 1899-1900.

	1898-99.		1899-1900.†	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
	18	2.91		

Trinidad.§

Although coal, glance pitch, gypsum, and galena are to be found, the Colony possesses no mines, properly so called.

The only mineral workings of any consequence are the diggings for asphalt at the well-known Pitch Lake at La Brea. The insular revenue derived from this source in 1899 was £45,000.

* Estimated to contain 718,323 ozs. or 22,328 kilos. of fine silver.

† " 2,379,962 ozs. or 73,977 kilos. of fine silver, on the assumption that 98½ ozs. are contained in one ton of ore.

‡ Figures are not yet available.

§ *Blue Book for Trinidad*, 1898 and 1899, and Acting Governor Knollys "Trinidad and Tobago Annual Report for 1899." *Colonial Reports*, Annual, No. 303, London, 1900 [Cd. 354—9] p. 14.

TRINIDAD—continued.

TABLE 353.

QUANTITY and VALUE of ASPHALT exported in the Years 1898 and 1899.

	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
			£	Galls.	Litres.	£
Asphalt, liquid	—	—	—	4,270	19,401	49
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
„ purified	13,622	13,841	27,243	14,483	14,715	29,609
„ raw	86,574	87,963	86,574	122,097	124,056	122,406
„ dried	—	—	—	780	793	1,089
Total value	—	—	113,817	—	—	153,153

Turks and Caicos Islands.*

Salt is the most important article produced in these islands. It is obtained by the solar evaporation of sea water in shallow ponds on the coast.

TABLE 354.

Mineral.	1898.			1899.		
	Quantity Exported.		Value.	Quantity Exported.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Salt	43,389	44,085	18,701	55,197	56,083	21,138

Victoria.†

The total number of persons employed in an industry makes a fair index of its importance. In Victoria we find 31,021 engaged in mining; this figure is much the same as that of the miners in Colorado, one of the great ore-mining States of America. In Victoria, 97 per cent. of the men are employed in or about gold mines, and the remaining 3 per cent. in mining for antimony ore, coal, infusorial earth, lead ore, and tin ore.

Statisticians very properly advocate that the output of gold in different countries should be stated in ounces of fine gold and not in ounces of bar gold. The necessity of a uniform standard is very patent in the case of the Australian colonies, where we

* Governor Sir A. W. L. Hemming, "Turks and Caicos Islands Annual Report for 1898.—*Colonial Reports*—Annual, No. 269, London, 1899 [C. 9498-S], and Blue Book for 1899.

† *Annual Reports of the Secretary for Mines for Victoria for 1898 and 1899.*

VICTORIA—continued.

find that the bars vary in value from an average of £3 an ounce in Queensland to £4 an ounce in Victoria. Judged by its output of 854,500 ounces, Victoria occupied the third place as a gold producer in 1899, whereas if the value £3,418,000 is considered, it comes second, for the 946,771 ounces of bar gold produced by Queensland were worth only £2,837,701.

There are now seven gold mines more than 3,000 feet deep, the deepest being the Lazarus at 3,424 feet.*

TABLE 355.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.

		1898.	1899.
Coal	893	880	
Gold	30,804	30,114	
Other Mines	37	27	
Total	31,734	31,021	

TABLE 356.

QUANTITY and VALUE of the MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony ore	110	112	510	—	—	—
Building stone	—	—	20,000	—	—	20,000
Brown coal	2,869	2,915	767	—	—	—
Clays	—	—	4,500	—	—	5,500
Coal	242,860	246,757	103,099	262,380	266,590	113,522
Gold	ozs. 837,257	kilos. 26,041	3,349,028	ozs. 854,500	kilos. 26,578	3,418,000
Infusorial earth	140	142	280	100	—	250
Quicksilver	—	—	—	—	—	20
Silver lead ore	20†	20	240	—	—	—
Tin ore	87	88	3,913	156	158	11,200
Total value	—	—	8,482,337	—	—	3,568,492

* Annual Report of the Secretary for Mines for Victoria for 1899, p. 13.

† Estimated to contain 2,000 ozs. of fine silver.

VICTORIA—continued.

TABLE 357.

DEATHS FROM ACCIDENTS AT MINES during the Years 1898 and 1899.

Kind of Mines.	1898.		1899.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	—	—	4	4.55
Gold	44	1.43	41	1.36
Total	44	1.39	45	1.45

The death-rate from accidents at the gold mines has averaged 1.44 per 1,000 during the last 20 years. On the whole it has remained remarkably steady, for it has never reached 2, and, with the exception of one year, it has never gone below 1 per 1,000. It is to be regretted that the table given in the Report affords no means of calculating the death-rate of the underground hands separately. As in all other countries, falls of rock and earth above and below ground account for more accidents than any other cause, and taking the average of the last 26 years,* 53.3 per cent. of the deaths have arisen in this manner.

The Mine Ventilation Bonus Board has now issued its third and final report†, with numerous important recommendations, which might be studied with advantage by ore miners in the Mother Country. The Commissioners consider it very desirable that a standard of purity should be fixed for the air in mines, and suggest that the proportion of carbonic acid should never be allowed to exceed $\frac{1}{2}$ per cent., or the proportion of oxygen be allowed to fall below 20 per cent. Section 135 of the *Mines Act* of 1897 already lays down a standard of quantity, and requires that 100 cubic feet of air should be supplied per man per minute. Another valuable suggestion of the Commissioners is that a water spray be made compulsory for laying the dust produced by rock drills. They insist upon the necessity of the Legislature requiring that mining managers and mining engineers should show proof of possessing sufficient professional qualifications.

Western Australia.‡

A map of the Colony, prepared by Mr. Maitland, the Government Geologist, and pre-facing the Report of the Department of Mines, shows by coloured signs the distribution of the various useful minerals which have been discovered, viz.:—Antimony, asbestos, coal, copper, diamonds, gold, graphite, iron, lead, mica, and tin.

Coal.—Several large coal-bearing districts have been discovered, the most important at present is the Collie coalfield; its output rose from 3,508 tons in 1898 to 54,336 tons in 1899, and is likely to increase rapidly.

Copper.—Most of the copper ore came from the West Pilbarra district.

Gold.—Western Australia is our premier gold-producing Colony, and the output goes on increasing at a marvellously rapid rate. The output for 1898 was 56 per cent.

* *Annual Report of the Secretary for Mines for Victoria* for 1899, p. 18.

† *Final Report of the Mine Ventilation Bonus Board*, Melbourne, 1900 [No. 12—3,943].

‡ *Reports of the Department of Mines of Western Australia for the Years 1898 and 1899*. Maitland. "The Mineral Wealth of Western Australia." *Geological Survey Bulletin* No. 4, Perth, 1900.

WESTERN AUSTRALIA—*continued.*

higher than that of 1897, and a similar jump took place last year, for the quantity produced was 1,643,877 ozs. or 593,694 ozs. more than in the previous year.

The goldfields are by no means confined to one part of the Colony; however, East Coolgardie throws all the others into the shade, as it produced in 1899 more than one-half of the total output.

Iron Ore.—For the first time, Western Australia appears as a producer of iron ore.

Salt.—124 tons of salt were produced at Rottnest Prison* by the solar evaporation of salt water.

Tin.—Like its neighbours, Western Australia is tin-bearing; most of the ore came from Greenbushes, and a small amount from a newly-discovered tin field near Marble Bar on the Pilbarra Goldfield.

The Mines Regulation Act of 1895† was amended last year by a new Statute, "The Mines Regulation Act Amendment Act, 1899." Certain of the alterations are due to the use of prime movers other than steam engines for winding purposes.

The new ventilation rule lays down a definite standard of quantity, and at least 100 cubic feet of air per minute have to be supplied for each person employed. The old rule was almost identical with that of the British Metalliferous Mines Regulation Act 1872 [Sect. 23(1)].

Another general rule requires each cage to be provided with catches and with a detaching hook to prevent its falling down the shaft in case of the rope breaking or being overwound.

Persons must not be employed for more than eight hours underground, the period of employment being reckoned from the time when a person commences to descend until he is relieved of his work and commences to return to the surface.

Section 23 contains the excellent ordinance that the code of signals in all mines shall be uniform, as prescribed by the regulations.

TABLE 358.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.

Kind of Mines.	Under-ground.	Above-ground.	Total for 1899.	Total for preceding Year.
Coal	46	146	192	70
Copper	86	61	147	160
Gold	7,525	8,555	16,080	13,066
Lead	7	7	14	20
Tin	623	75	698	170
Total	8,287	8,844	17,131	13,486

* Report on Rottnest Prison for the year 1898, Perth, 1899.

† Western Australia. The Goldfields Act, 1895, with Regulations for the Management of the Goldfields of the Colony, Perth, 1896; page 147. Price 1s.

WESTERN AUSTRALIA—continued.

TABLE 359.

QUANTITY and VALUE of the MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons. (Not stated)	Metric Tons.	£
Asbestos (exported) ...	—	—	—	—	—	1
Coal ...	3,508	3,564	1,761	54,336	55,208	25,951
Copper ore ...	355	361	4,266	2,964	3,012	35,938
Gold ...	ozs. 1,050,184	kilos. 32,664	3,990,698	ozs. 1,643,877	kilos. 51,130	6,246,732
Iron ore ...	—	—	—	12,852	13,058	8,939
Lead ore ...	5	5	33	83	84	912
Lead, pig (exported) ...	—	—	—	77	78	1,077
Limestone ...	—	—	—	17,593	17,875	2,838
Mica (exported) ...	—	—	—	(Not stated)	—	50
Salt* ...	124	126	280	110	112	249
Tin ore (dressed) ...	68	69	2,760	335	340	25,269
Total value ...	—	—	3,999,798	—	—	6,347,956

* Produce of Rottnest Island only.

TABLE 360.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.

Kind of Mines.	1898.		1899.					
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.			Death-rate per 1,000 Persons Employed.		
			Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.
Coal	—	—	1	—	1	5·21	—	5·21
Gold	31	2·37	37	7	44	4·92	·82	2·74
Other mines	—	—	—	—	—	—	—	—
Total for all mines ...	—	—	38	7	45	4·59	·79	2·63

The danger of storing large quantities of explosives underground was sadly brought home by a bad accident at Field's Find Mine, Yalgoo Goldfield. In some unexplained manner 50 lbs. of gelignite stored in a level exploded and blew four men to pieces. The men appear to have often carried loose detonators in the same box as the dynamite.

An uncommon kind of accident happened at Paddington Consols Mine, where residues from the cyanide process are used for filling the "stopes." As the ventilation was defective, the fumes given off from the residues were not carried away, and one man was suffocated and three seriously affected. This accident led to the amendment of the ventilation rule mentioned on the previous page.

West Indies. (See BARBADOS, REDONDA, TRINIDAD.)

FOREIGN COUNTRIES.

Abyssinia.*

Coal.—Workable lignite is said to occur at Debra, Libanos, and Ankober.

Gold.—This metal is obtained from the Wallega, Shankalla and Benischongul districts. The gold exported from Addis Abbaba and Harrar was estimated to be worth £139,600, the amount of fine gold may be reckoned to have been 31,161 ozs., and of fine silver contained in the gold about 2,710 ozs.

Salt.—Mines at Arho in the Tittal country between Makallé and the Red Sea produce a large quantity of salt; the mineral is likewise obtained from Gojam. The estimated value of the salt produced in the whole of the Addis Abbaba district amounted to £18,700.

Algeria.†

The two principal minerals raised in Algeria are iron ore and phosphate of lime. A considerable quantity of limestone is quarried, and the workings for salt and zinc ore are of some importance.

Iron Ore.—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by the Mokta-el-Hadid Mines near Bona and the Benisaf Mines near Tlemsen. The former exported 155,605 tons in 1899, and the latter 395,349 tons.‡

Marble.—Numidian marble had won renown in the time of the Romans. The onyx marble produced by the Colony is of great beauty. One of the localities where it is found is Sidi-Hamza. Quarries at Filfila near Philippeville produce statuary marble as well as many coloured varieties.

Petroleum.—Great hopes are based upon the occurrence of mineral oil in the Department of Oran; of the existence of wide petroliferous zones there is no question. It remains to be seen how far the oil can be extracted with profit.

Phosphate of Lime.—The growth of the phosphate industry has been very rapid. The annual output, which was only about 5,000 tons in 1893, now amounts to more than 300,000 tons. The phosphate is quarried in the vicinity of Tébéssa and at Tocqueville in the Province of Constantine, and it is now the most important mineral product of Algeria.

Salt.—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

Zinc Ore.—Calamine and blende are both worked.

TABLE 361.

PERSONS EMPLOYED during the Years 1898 and 1899.§

Year.	At Mines.	At Underground Quarries.	At Open Quarries.
1898	1,786	800	2,649
1899	2,571	1,000	2,796

* Baird, "Report on the Trade of Addis Abbaba, and Harrar, Abyssinia." *Dipl. and Cons. Reports*, No. 2531, Ann. Ser. 1899-1900 [Cd. 352-37] 1900, with map.

† Consul-General Hay-Newton, "Trade of Algeria for the year 1899." *Dipl. and Cons. Reports*, No. 2472, Ann. Ser., 1900. [Cd. 1-109].

‡ *Compagnie des Minerais de fer magnétique de Mokta-el-hadid. Rapport du Conseil d'Administration.* Paris, 1900.

§ *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1898, and pour l'année 1899.*

ALGERIA—continued.

TABLE 362.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1898 and 1899.*

Mineral.	1898.		1899.	
	• Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore	138	22,080	200	52,000
Brown coal	200	2,400	154	1,848
Iron ore	473,569	3,518,337	550,941	4,661,631
Lead ore, argentiferous	120	15,600	389	52,412
Rock salt and salt from brine	21,302	429,815	17,378	336,500
Zinc ore	29,774	1,406,707	42,970	2,512,895
Total Value in Francs	—	5,394,939	—	7,617,286
„ „ £ sterling	—	215,797	—	304,691

TABLE 363.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1898 and 1899.*

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Clay	78,690	310,375	88,600	369,370
Flags	6,372	67,520	7,000	74,325
Gypsum	150	375	200	500
Limestone	25,975	623,915	25,645	604,905
Marble	985	150,020	225	2,140
Onyx... ..	219	62,415	217	61,987
Plaster	29,750	552,925	31,800	588,975
Phosphate of lime	269,400	5,390,000	324,983	6,499,660
Sand and gravel	72,185	78,585	72,760	79,135
Stone for building	722,341	1,644,015	726,363	1,977,273
„ (rough and broken)	702,130	1,046,215	714,800	1,058,510
Total Value in Francs	—	9,926,360	—	11,316,780
„ „ £ sterling	—	397,054	—	452,671

* Statistique de l'Industrie Minière en France et en Algérie pour l'année 1898, and pour l'année 1899.

ALGERIA—continued.

TABLE 364.

DEATHS from ACCIDENTS during the Years 1898 and 1899.*

Kind of Working.	1898.		1899.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines... ..	3	1.68	4	1.55
Underground Quarries	1	1.25	3	3.00
Open Quarries	—	—	3	1.07
Total	4	.76	10	1.57

Annam. (See INDO-CHINA.)

Arabia.

The Arab is not a miner by nature, and there is little or no working for minerals on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

Argentine Republic.

All writers seem to agree that the mineral resources of the Argentine Republic are great; † little, however, has been done to develop them. In addition to the ores of copper, gold, iron, lead, mercury, nickel, and silver, the Republic can produce asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur. As railways are extended to the Andes, bringing facilities for working, the mining industry is sure to progress rapidly.

Unfortunately the National Department of Mines and Geology at Buenos Aires is unable to supply any statistics. The figures in the table below have, therefore, no official sanction.

TABLE 365.

QUANTITY and VALUE of COPPER, GOLD, and SILVER produced during the Years 1898 and 1899.

Metal.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
Copper (fine)† ...	Metric Tons. 127	£ 6,486||	Metric Tons. 66	£ 4,781||
Gold	Kilos. 207§	28,255	**	—
Silver	Kilos. 11,930§	101,807¶	**	—

Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1898, and pour l'année, 1899.

"Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Proc., Inst. C. E.*, CXXVIII, 1896-7, Part II.

Return compiled by Henry R. Merton & Co., Ltd., London.

Report of the Director of the United States Mint for 1899. The figures relate to the year 1897.

Value of foreign copper in London market.

Aruba. (See DUTCH WEST INDIES.)

Austria-Hungary.*

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by Austria, though not forming part of the empire.

It is to be regretted that complete statistics for 1899 are not yet issued.

Coal.—Brown coal is worked on a large scale in Bohemia and in Hungary.†

Silesia is the largest producer of ordinary coal, next comes Bohemia, and then Moravia, and, fourthly, Hungary.

Gold.—The bulk of the gold comes from mines in Hungary, and especially from the neighbourhood of Nagybánya in the old principality of Transylvania.

Iron Ore.—Hungary again is the chief producer of iron, and the ores of this metal are worked in very many parts of the kingdom. Among the Austrian provinces, Styria takes the first place, and 99 per cent of its output is spathose ore.

Lead Ore.—A large proportion of the Austrian lead ore comes from Carinthia.

Mercury.—The famous quicksilver mine at Idria in Carniola has now been worked for upwards of five centuries; since 1580 it has belonged to the State. A little mercury is obtained from Hungary.

Opal.—The celebrated opal mines of Hungary are situated at Dubnik in the county of Sáros; they are worked by the State. The annual output is 10 to 12,000 carats.

Ozokerite and Petroleum.—Galicia is remarkable for two important products, mineral wax and mineral oil. The principal workings for the former are at Boryslaw in the Drohobycz district, which likewise has the most productive oil-wells.

Salt.—The Government has a monopoly of the salt trade. Rock salt is obtained in Galicia and Hungary, and saliferous marl is treated by the lixiviation process in the Austrian Alps. On the shores of the Adriatic salt is extracted by solar evaporation from sea water.

Silver.—Bohemia and Hungary both produce silver. The Przibram mines in the former country have long been celebrated, not only as large producers of silver and lead, but also on account of their great depth.

In order to promote the welfare of the country a law was passed in 1899 granting privileges and favours to numerous industrial enterprises, among which figure mines and metal extraction works.‡

Much misery and suffering were caused by a strike among the coal miners of Bohemia and Moravia, which, after lasting ten weeks, was brought to an end by the strikers returning to their work unconditionally.§

* *Exposition Universelle de 1900, Paris; Catalogue Spécial de la Hongrie*, Budapest, 1900, p. 203; *Weltausstellung, Paris, 1900; Katalog der oesterreichischen Abtheilung, Heft 7, Gruppe xi., Bergwesen*, Vienna, 1900. Remenyik, *Les Mines de Métaux de Hongrie*, Budapest, 1900. Edvi-Illés, *L'Industrie des Mines de Fer et Hauts-fourneaux de Hongrie*, Budapest, 1900. Déry, *Les Charbonnages Hongrois*, Budapest, 1900.

† *L'exploitation des Charbonnages Hongrois*, Budapest, 1900.

‡ Percy Bennett, "Report on State Encouragement to Industry in Hungary." *Dipl. and Cons. Reports*, No. 531 Misc. Ser., 1900 [Cd. 2-14], p. 8.

§ Consul Forbes, "Report on the Trade of Bohemia for the year 1899." *Dipl. and Cons. Reports*, No. 2402, Ann. Ser., 1900, p. 4.

AUSTRIA.

TABLE 366.

PERSONS EMPLOYED at MINES, arranged according to PROVINCE in which Employed, during the Years 1898* and 1899.

Province.	Persons Employed.			
	1898.		1899.‡	
	Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower	688	0.53		
„ Upper	1,615	1.26		
Bohemia	59,387	46.15		
Bukowina	109	0.09		
Carinthia	3,761	2.92		
Carniola	2,298	1.79		
Dalmatia	423	0.33		
Galicia	4,535	3.52		
Görz and Gradisca	10	0.01		
Istria	939	0.73		
Moravia	11,200	8.70		
Salzburg	515	0.40		
Silesia... ..	26,599	20.67		
Styria	15,532	12.07		
Tirol	1,073	0.83		
Vorarlberg	1	0.00		
Total	128,685	100.00		

TABLE 367.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1897† and 1898.‡

Year.	Coal.						Brown Coal.						Iron Ore.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.
1897 ..	138	50,904	3,228	3,933	2	58,067	280	44,771	2,148	1,161	4	48,084	37	4,962	71	236	—	5,269
1898 ..	134	53,333	3,304	4,172	—	60,809	257	46,279	2,196	1,212	3	49,690	33	5,115	28	178	2	5,523

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1898, Vienna, Part II., No. 2, p. 125.

† Do. do. do. 1897, do. No. 2, pp. 124—127.

‡ Do. do. do. 1898, do. No. 2, pp. 126—129.

§ Figures are not yet available.

AUSTRIA—continued.

TABLE 367—continued.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1897 and 1898—continued.

Year	Other Mines.						All the Mines.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	General Total.
1897	110	11,534	936	497	7	12,974	545	112,171	6,383	5,827	13	124,394
1898	111	11,433	961	451	18	12,863	535	116,160	6,499	6,013	23	128,695

TABLE 368.

PERSONS EMPLOYED at SALT MINES and WORKS during the Years 1897* and 1898.†

Country or Province.	Salt Mines.			Brine Evaporating Works and Sea Salt Works.					Total at Salt Mines and Works.				
	Men.	Young Persons.	Total.	Men.	Women.	Young Persons.	Children.	Total.	Men.	Women.	Young Persons.	Children.	Total.
Upper Austria ..	349	—	349	892	18	—	—	910	1,241	18	—	—	1,259
Salzburg	192	1	193	235	2	—	—	237	427	2	1	—	430
Bukowina	45	—	45	21	—	—	—	21	66	—	—	—	66
Styria	107	—	107	341	3	—	—	344	448	3	—	—	451
Tyrol	131	—	131	115	—	—	—	115	246	—	—	—	246
Dalmatia	—	—	—	1,758	452	—	139	2,349	1,758	452	—	139	2,349
Istria	—	—	—	850	582	367	113	1,912	850	582	367	113	1,912
Galicia	1,484	—	1,484	520	—	—	—	520	2,004	—	—	—	2,004
Totals for 1898 ..	2,308	1	2,309	4,732	1,057	367	253	6,408	7,040	1,057	368	253	8,717
Totals for 1897 ..	2,302	1	2,303	4,332	1,061	408	298	6,099	6,634	1,061	409	298	8,402

TABLE 369.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1897 and 1898.†

Province.	Kind of Workings.	1897.				1898.			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
Galicia...	Ozokerite ...	6,084	323	—	6,407	5,159	243	11	5,413
" ..	Petroleum ...	5,525	5	7	5,537	5,891	5	6	5,902

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1897, Vienna. Part II., No. 2, p. 136.

† Do. do. do. 1898, do. No. 2, p. 138.

† Do. do. do. 1898, do. No. 2, pp. 238 and 239.

AUSTRIA—continued.

TABLE 370.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1898* and 1899.†

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Florins.	Metric Tons.	Florins.
Alum shale and vitriol ore ...	28,914	21,367		
Antimony ore ...	679	57,167		
Asphalt ...	643	15,604		
Bismuth ore ...	—	—		
Brown coal ...	21,083,361	43,492,791		
Coal ...	10,947,522	41,142,493		
Copper ore ...	6,791	253,248		
Gold ore ...	448‡	54,876		
Graphite ...	33,062	873,566		
Iron ore ...	1,733,649	4,227,688		
Lead ore ...	14,362	1,230,391		
Manganese ore ...	6,132	47,795		
Quicksilver ore ...	88,519	801,076		
Silver ore ...	20,886§	1,762,595		
Sulphur ore ...	496	4,153		
Tin ore ...	13	1,896		
Tungsten ore ...	36	33,159		
Uranium ore ...	51	51,719		
Zinc ore ...	27,395	799,290		
Total value in florins ...	—	94,870,874		
„ „ £ sterling ...	—	£7,905,906		

TABLE 371.

QUANTITY and VALUE of SALT produced during the Years 1898* and 1899.†

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Florins.
Upper Austria ...					
Salzburg ...					
Bukowina ...					
Styria ...					
Tyrol ...					
Dalmatia ...					
Istria ...					
Galicia ...					
Total for 1899 ...					
„ 1898 ...	45,052	185,531	47,907	63,567	26,519,497 £2,209,958

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1898, Vienna, Part II., No. 1, pp. 171, 174-177 and 191.

† Figures for 1899 are not yet available.

‡ 71 kilos. of fine gold were obtained at the Metallurgical Works in 1898.

§ 40,805 kilos. of fine silver were obtained at the Metallurgical Works in 1898.

AUSTRIA—continued.

TABLE 372.

QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1898* and 1899.†

Province.	Mineral.	1898.		1899.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Florins.	Metric Tons.	Florins.
Galicia ...	Ozokerite ...	7,759	2,433,120		
" ...	Petroleum ...	323,142	8,211,941		
	Total value in florins	—	10,645,061		
	" £ sterling	—	£887,088		

TABLE 373.

ACCIDENTS at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1897 and 1898.†

Kind of Mines.	1898.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
Coal (bituminous) ...	55	377	·90	199,046
Brown coal ...	87	442	1·75	242,337
Iron ore ...	5	41	·94	346,730
Other mines (excluding salt and ozokerite mines, and petroleum wells).	15	62	1·17	15,228
Total for 1898 ...	162	922	1·26	209,833
" preceding year ...	165	814	1·28	198,734

TABLE 374.

ACCIDENTS at SALT MINES during the Years 1897 and 1898.†

Year.	Number of Deaths from Accidents.	Number of Persons injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
1897	3	6	1·30	15,090
1898	—	10	—	—

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1898, Vienna, Part II., No. 2, pp. 238 and 239.

† Do. do. do. pp. 152, 161, and 169.

‡ Figures for 1899 are not yet available.

AUSTRIA—continued.

TABLE 378.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORKINGS for OZOKERITE and PETROLEUM) during the Years 1897 and 1898.*

Cause of Accident.	Number of Persons killed.		Increase or Decrease.
	1897.	1898.	
By falls of roof	29	40	+ 11
„ haulage or winding appliances ...	29	24	— 5
„ stones or things falling down ...	46	30	— 16
„ machines or tools	4	8	+ 4
„ falling down	19	22	+ 3
„ firedamp	5	—	— 5
„ ignitions of inflammable gas ...	—	1	+ 1
„ suffocation	8	8	=
During descent or ascent	—	1	+ 1
By travelling in cage or climbing ladders	4	6	+ 2
„ blasting	3	8	+ 5
While undercutting (holing)	—	1	+ 1
„ timbering	6	1	— 5
By irruption of water	2	6	+ 4
„ other causes	13	6	— 7
Total	168	162	— 6

The preceding tables show that in the mines of Austria proper (exclusive of workings for ozokerite and petroleum) there were 162 deaths from accidents, or 6 less than in 1897.†

The accidents at the ozokerite and petroleum workings separately were as follows :—

TABLE 379.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS, classified according to the PLACE where the ACCIDENT happened, during the Year 1898 and total for the preceding year.‡

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts	5	9
In levels	2	3
At the working face	1	5
On surface	5	49
Total for 1898	13	66
„ preceding year	9	56

There were only 10 firedamp explosions in all the mines (ozokerite and petroleum workings included) of Austria proper ; by these 10 explosions no person was killed, but 8 were seriously injured, and 10 slightly injured. As shown by the table below, 8 of the 10 explosions were due to naked lights. Not a single explosion took place in

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1898, Vienna, Part II., No. 2, p. 154.

† Do. do. do. do. p. 151.

‡ Do. do. do. do. pp. 251-254.

AUSTRIA—continued.

the collieries of Silesia ; 8 of the 10 explosions occurred in Bohemia, 1 in Styria and 1 in Galicia.

TABLE 380.

Separate EXPLOSIONS of FIREDAMP, arranged according to kind of MINES or other MINERAL WORKINGS, and cause of ACCIDENT during the Year 1898.*

Cause.	Coal.				Brown Coal.				Ozokerite Mines and Petroleum Wells.				Total.			
	Fatal Accidents.	Deaths.	Non-fatal Accidents.	Persons Injured.	Fatal Accidents.	Deaths.	Non-fatal Accidents.	Persons Injured.	Fatal Accidents.	Deaths.	Non-fatal Accidents.	Persons Injured.	Fatal Accidents.	Deaths.	Non-fatal Accidents.	Persons Injured.
Naked lights ..	—	—	6	13	—	—	2	4	—	—	—	—	—	—	8	17
Safety lamps defective.	—	—	1		—	—	—	—	—	—	—	—	—	—	1	
Not ascertained..	—	—	—	—	—	—	—	—	—	—	1	1	—	—	1	1
Total ..	—	—	7	13	—	—	2	4	—	—	1	1	—	—	10	18

The Austrian Government has recently issued a useful volume † containing all the official regulations for the prevention of accidents at mines.

BOHEMIA.

As Bohemia employs such a large proportion of the miners in Austria, details concerning this province have been extracted from the official reports.

TABLE 381.

PERSONS EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1897 and 1898.‡

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
Coal	17,562	1,136	1,892	—	20,590	34·67
Brown coal	29,294	1,040	678	—	31,012	52·22
Iron	1,480	—	45	—	1,525	2·57
Other mines... ..	6,005	145	109	1	6,260	10·54
Total for 1898	54,341	2,321	2,724	1	59,387	100·00
„ preceding year	52,891	2,176	2,709	2	57,778	100·00

TABLE 382.

DEATHS at MINES during the Years 1897 and 1898.§

Kind of Mines.	Number of Deaths from Accidents.	Average Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral produced per Death by Accident.
Coal	17	0·83	237,847
Brown coal	71	2·29	244,721
Iron ore	1	0·65	1,733,649
Other mines... ..	6	0·96	38,071
Total for 1898	95	1·60	246,112
„ preceding year	98	1·70	220,625

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1898, Vienna, Part II., No. 2, p. 260.

† Unfallverhütungs-Vorschriften beim österreichischen Bergbau, Vienna, 1900.

‡ Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1898, Vienna, Part II., No. 2, p. 96.

§ Do. do. do. do. pp. 139 and 140. Also included with Austria in table on page 344.

HUNGARY.

TABLE 383.

PERSONS EMPLOYED at all MINES (including SALT MINES) and SMELTING WORKS during the Years 1898* and 1899.†

Year.	Men.	Women.	Children.	Total.
1898	61,688	1,649	6,544	69,881
1899	62,770	2,852	5,686	71,308

TABLE 384.

QUANTITY and VALUE of MINERALS and METALS produced in 1898‡ and 1899.†

Mineral, Metal, or Product.	1898.		1899.	
	Quantity.	Value, Unit = 1,000 Crs.	Quantity.	Value, Unit = 1,000 Crs.
	Metric Tons.		Metric Tons.	
Antimony ore	2,201	99·6	1,965	168·5
Antimony, crude, and regulus ...	856	540·3	940	687·2
Asphalt	3,125	327·2	3,060	322·5
Auriferous and argentiferous lead and copper ore.	113,266	1,907·7	76,583	1,219·0
Auriferous silver ore	2,083	469·4	993	202·0
Bismuth ore	94	45·7	80	51·3
Briquettes	31,781	506·6	31,137	499·2
Brown coal	4,516,581	28,044·8	4,292,584	29,300·8
Coal	1,239,499	13,138·4	1,238,855	13,005·0
Copper ore	428	12·4	439	34·7
Gold ore (washed)	6,129	752·0	7,674§	1,085·0
Iron ore	1,666,836	9,054·8	1,953,179||	12,120·7
Iron pyrites	58,079	460·7	79,519	639·8
Iron vitriol	745	8·9	771	12·3
Lead ore... ..	4,721	607·9	4,165	770·1
Manganese ore	8,055	16·7	5,073	28·4
Petroleum	2,471	121·9	2,125	107·5
Quicksilver ore... ..	55	5·0	30	3·9
Salt	178,551	27,978·0	182,593	26,994·0
Silver ore	1,691	177·0	1,747¶	147·8
Sulphur	93	14·2	116	18·0
Total value in Crowns	—	84,289·2	—	87,417·7
„ „ £ sterling	—	£3,510,359	—	£3,612,301

* Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Érkönyv*, New Series VI., 1898, Budapest, p. 93.

† Official Return furnished by the Central Statistical Office, Budapest

‡ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Érkönyv*, New Series VI., 1898, Budapest, pp. 97 and 100.

§ 3,069 kilos. of fine gold were obtained at the Metallurgical Works in 1899.

|| Including 385,319 metric tons valued at 2,273·4 exported.

¶ 21,018 kilos. of fine silver were obtained at the Metallurgical Works in 1899.

HUNGARY—*continued.*

TABLE 385.

DEATHS at all MINES (including SALT MINES and SMELTING WORKS) during the Years 1898* and 1899.†

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.
1898	88	221	1.26
1899	106	228	1.49
Comparison between 1898 and 1899	+18	+7	+0.23

BOSNIA AND HERZEGOVINA.‡

At the present moment Bosnia is not an important mining land ; but the progress of the mineral industry since the country has been administered by Austria warrants the prediction that it has a great future before it. Brown coal, iron ore, and salt are the chief mineral products. Other minerals known to exist are the ores of antimony, arsenic, chromium, copper, gold, lead, manganese, quicksilver, and zinc ; besides asbestos, asphalt, magnesite, and petroleum.

Brown Coal.—The principal collieries are at Zenica and Kreka ; they are worked by the State. The most important seams are respectively 33 feet (10 metres) and 52½ feet (16 metres) thick. The coal is of Tertiary age. Coal-mining is a new industry, for it dates back only as far as 1880 ; 500 tons only were raised in that year, whilst in 1899 the total output had risen to 303,425 tons, of which Zenica colliery produced 125,400 tons and Kreka colliery 171,550 tons. Some is exported to towns on the Adriatic.

Chromic Iron.—A large Viennese company has chromium mines at Dubostica.

Copper Ore.—The ores of this metal are mined and smelted at Sinjako.

Iron Ore.—Bosnia is rich in iron ore, and huge heaps of slag near Blagaj show that the deposits were worked on a large scale by the Romans.

Near Varès thick beds of hematite and spathose iron ore supply not only local blast furnaces, but also Trieste and elsewhere. The total output in 1900 is expected to reach 130,000 tons.

Salt.—The extraction of salt from natural brine springs dates back, at least, to Roman times, and probably very much further. As in the Austro-Hungarian Empire, the industry is a State monopoly. Numerous borings have proved that the deposits near Dolnja Tuzla are capable of yielding an ample supply of brine in the future, to say nothing of rock salt. Some of the brine from Dolnja Tuzla is piped 6 miles to Lukavac, and there made into soda by the ammonia process.

* Official Return furnished by the Central Statistical Office, Budapest, and published in *Magyar Statistikai Évkönyv*, New Series, VI., 1898, Budapest, pp. 97 and 100.

† Official Return furnished by the Central Statistical Office, Budapest.

‡ Pösch, *L'Industrie Minérale de Bosnie-Herzégovine*.—Vienna, 1900. Statistics prepared by the "Bosnisches Bureau. Montan-Abtheilung," published in the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen*, XLVIII. Jahrgang, 1900.

BOSNIA AND HERZEGOVINA—*continued.*

TABLE 386.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1898 and 1899.

	Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.
	1898	777	154	378	163
	1899	887	235	375	194

TABLE 387.

QUANTITY and VALUE of MINERAL produced during the Years 1898 and 1899.

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Florins.	Metric Tons.	Florins.
Brown coal	271,183	566,324	303,425	650,026
Chrome ore	458	16,370	196	7,840
Copper ore	4,323	37,496	4,611	35,310
Iron ore	58,532	128,357	67,085	167,670
Iron pyrites	240	1,200*	430	2,150
Manganese ore	5,319	93,154	5,625	89,500
Salt (Brine) ... (hectolitres)	1,177,788†	47,112	1,388,047‡	55,502
Zinc ore	10	260	—	—
Total value in Florins	—	890,273	—	1,007,998
„ £ sterling	—	£74,189	—	£84,000

TABLE 388.

DEATHS at MINES during the Years 1898 and 1899.

Year.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1898	3	—	3	—	—	—	3	2.29
1899	3	—	3	—	—	—	3	2.00

* Estimated on value for 1897.

† Containing 12,507 metric tons of salt.

‡ „ 14,740 „ „ „

Bavaria. (*See* GERMAN EMPIRE.)

" " " " " " " " " " 1890, p. 8.

BELGIUM—*continued.*

It was pointed out in the General Report for the year 1897 that the Belgian Government had passed a law with the object of gradually putting a stop to the employment of females below-ground. The accompanying Table shows the complete success of the measures which have been taken. It is evident that within a few years female labour below-ground will become a thing of the past in Belgium.

TABLE 390A.

FEMALES employed BELOW-GROUND at MINES in the Years 1891–1899.*

Year.	Under 16 Years.	16 to 21 Years.	Above 21 Years.	Total.
1891	685	2,285	72	3,691
1892	219	1,957	719	2,895
1893	44	1,505	623	2,172
1894	—	1,076	542	1,618
1895	—	673	595	1,268
1896	—	291	597	888
1897	—	87	549	636
1898	—	19	405	424
1899	—	—	289	289

Ankylostomiasis continues to be troublesome among miners in Belgium, and the Minister of Industry and Labour, before settling finally upon a code of regulations to combat the pest, has issued a circular† in which he sets forth the most essential precautions against the evil, viz. :—

1. A sufficient number of privies, suitably arranged, and kept in proper order, shall be at the disposal of the surface workmen and of those who come to the mine to work below ground.

2. Movable pails, for receiving the workmen's evacuations, shall be placed at the various on-setting places and near the working places. When these are very extensive, others shall be arranged in places suitably chosen so as to avoid making the workmen walk too far in order to use them.

The pails must be strong, staunch and portable, and so closed as to prevent the faecal matter from being thrown about.

Rules must be established obliging the workmen to use the pails and to cover each evacuation with a disinfectant supplied to them. Better still, closets with automatic disinfection may be erected.

The pails shall be emptied daily at the surface into a suitable cesspool, and then cleaned and disinfected.

3. Workmen must be forbidden to drink mine water or to wash their hands with mine water.

4. At all important collieries a special service shall be organized for detecting ankylostomiasis, provided with a laboratory for the purpose.

This service may be common to a group of workings, if they are of small importance.

5. A register shall be kept at each working, in which the results of the investigations shall be entered.

6. Instructions as to the best means of avoiding the disease shall be given by lectures, tracts and posters.

* *Rapports Annuels de l'Inspection du Travail, Année 1899.* Brussels, 1900.

† Ankylostomiasis.—Mesures prophylactiques. Circulaire du 15 Mars 1900 aux Gouverneurs des provinces de Liège, de Namur et de Hainaut, aux Inspecteurs Généraux des Mines et aux Ingénieurs-en-chef Directeurs des Mines :—*Annales des Mines de Belgique*, Vol. V., p. 318. et seq. Brussels, 1900.

BELGIUM—continued.

TABLE 391.

COAL MINES.

THICKNESS OF COAL SEAMS, NUMBER OF PERSONS EMPLOYED, and OUTPUT per PERSON in each District during the Year 1899, and Totals for the previous Year.*

District.	Mean useful thickness of Coal Seam.	Number of Persons Employed.				Ratios.		Number of Square Metres of Seam laid bare.				Annual Output. (Metric Tons.)						Daily Output. (Metric Tons.)					
		Underground.			Above-ground.	General Total.	Of Persons Employed at the Face to those Employed Underground.	Of Persons Employed Underground to Total Number Employed.	Days worked.	In the Year.	Per Year.	Per Worker at the Face.	Per District.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Underground and Above-ground.	Per Surface Worker.	Per Worker Above and Under-ground.			
		At the Face.	Others.	Total.																			
Mons ...	Metre. 54	6,295	16,982	23,277	7,009	30,286	27	77	292	6,084,650	967	3.35	4,536,280	726	267	195	617	150	2.49	91	67	2.22	51
Centre ...	64	3,494	10,782	14,276	4,882	19,158	24	75	287	3,997,160	1,144	3.88	3,564,300	963	312	236	689	175	3.35	109	82	2.37	61
Charleroi ...	76	7,243	22,043	29,286	12,468	41,754	25	70	286	7,879,900	1,088	3.77	7,680,800	1,001	348	262	616	184	3.71	122	92	2.15	64
Namur ...	79	626	1,745	2,371	939	3,310	26	72	295	599,450	958	3.25	641,360	1,021	368	271	683	194	3.47	125	92	2.32	66
Liège ...	71	5,131	18,097	23,228	7,522	30,750	22	76	301	6,158,010	1,200	3.99	5,849,328	1,140	323	252	778	190	3.78	107	84	2.58	63
Totals and Averages for 1899		22,789	69,649	92,438	32,820	125,258	25	74	292	24,719,170	1,085	3.72	22,072,068	968	317	239	672	176	3.31	109	82	2.30	60
" " 1898	66	22,548	67,741	90,289	32,557	122,846	25	73	302	25,569,018	1,134	3.75	22,088,335	980	326	245	678	180	3.21	108	81	2.24	60

* Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à vapeur, pour l'année 1899, Brussels, pp. 10 and 11.

BELGIUM—*continue*.

TABLE 392.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES* for the Years 1898 and 1899.†

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
Barytes <i>Metric Tons</i>	21,700	Francs. 151,900	25,900	Francs. 181,300
Clay "	287,805	2,081,200	291,125	1,994,840
Coal "	22,088,335	242,893,900	22,072,068	274,443,900
Felspar <i>Cubic Metres</i>	1,000	9,900	1,525	16,750
Flint for earthenware "	22,150	88,500	25,185	103,450
Iron ore <i>Metric Tons</i>	217,370	1,058,220	201,445	1,073,100
Lead ore... .. "	133	21,504	137	32,700
Manganese ore "	16,440	211,500	12,120	156,800
Marl and chalk... .. <i>Cubic Metres</i>	297,050	681,100	351,800	577,700
Ochre and other colours .. "	290	5,900	300	6,000
Phosphate of lime "	156,920	1,516,150	190,090	1,710,900
Phosphatic chalk "	224,400	1,789,400	237,090	1,837,350
Pyrites <i>Metric Tons</i>	147	886	283	1,900
Sand <i>Cubic Metres</i>	638,424	961,325	627,770	1,208,490
Slate <i>Number</i>	42,311,000	1,735,000	44,167,000	1,788,800
Stone :—	210	18,300	200	1,760
Building stone dressed .. "	215,417	15,887,670	139,294	16,245,730
Conglomerate "	180	23,400	200	27,000
Dolomite "	37,100	65,340	56,400	99,100
Flags <i>Square Metres</i>	170,672	788,250	144,330	636,775
Gravel and broken stone. } <i>Cubic Metres</i>	360,960	789,500	258,835	609,190
Hone stones and scythe stones. } <i>Number</i>	89,150	112,950	82,100	70,800
Limestone <i>Cubic Metres</i>	212,685	373,700	195,505	389,780
Marble "	16,610	2,735,500	17,740	3,005,850
Millstones "	—	—	450	13,000
Paving stone... .. <i>Number</i>	108,025,000	10,081,570	114,103,900	11,182,055
Rough stone, broken stone, and lime. <i>Cubic Metres</i>	2,968,997	12,903,475	3,238,875	13,675,125
Tufa "	—	—	21,500	67,000
Zinc ore... .. <i>Metric Tons</i>	11,475	747,560	9,460	855,400
Total value in Francs	—	297,733,600	—	332,012,545
" " £ sterling	—	£11,909,344	—	£13,280,502

* Excluding the two Flanders and the Province of Antwerp, which only furnish Tertiary clays for making bricks tiles, and sand used in making glass and for other purposes.

† *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1899, Bruxelles* 1900, pp. 17, 24, 25, and 27.

BELGIUM—continued.

TABLE 393.

NUMBER of DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1898 and 1899.*

Year.	Kind of Workings.	Under-ground.	Above-ground.	Total.	Number of Deaths per 1,000 Persons Employed.		
					Under-ground.	Above-ground.	Total.
1898	Coal mines	154	18	172	1.71	.55	1.40
"	Ore mines	—	—	—	—	—	—
"	Underground quarries...	9	—	9	—	—	†
1899	Coal mines	101	20	121	1.09	.61	.97
"	Ore mines	—	—	1†	—	—	.67
"	Quarries (open and underground).	—	—	24	—	—	.65

Bohemia. (See AUSTRIA-HUNGARY.)

Bolivia.§

Bolivia is remarkable as being the great silver-producing country of South America ; it likewise yields antimony, bismuth, copper, gold, manganese, and tin, besides a little borax.

Bismuth.—The bismuth is obtained from the Chorolque mines in the department of Potosi.

Copper Ore.—The copper ore of the Corocoro district is rich enough to pay heavy transport expenses to Mollendo, whence it is shipped to Europe.

Gold.—The precious metal is extracted from alluvial gravels, especially in the Eastern valleys of the Cordillera Real, in the upper branches of the La Paz river, and in valleys radiating from Mount Sorata. Veins of auriferous quartz are being worked with profit in the Araca Mountain, over against Illimani.

Silver.—The richness of the silver mines of the Potosi district has become proverbial ; a few years ago more than one-half of the silver was produced by the Huanchaca mines.

Tin Ore.—The tin is found in veins along the eastern border of the plateau from Lake Titicaca to near the south boundary of the Republic.

* *Op. cit.*, pour l'année 1898, pp. 46 and 51, and pour l'année 1899, pp. 46 and 51.

† The death-rate cannot be calculated as the number of persons employed in underground quarries is not given separately.

‡ Not stated whether the accident happened underground or above-ground.

§ Consul St. John, "Trade, &c. of Bolivia for the year 1895." *Dipl. and Cons. Reports*, No. 1841; Ann. Ser., 1897 [8277-59], and Sir Martin Conway, "Some of the undeveloped resources of Bolivia." *Jour. Soc. Arts*, vol. xlviii., 1900, 36.

BOLIVIA—continued.

TABLE 394.

QUANTITY and VALUE of MINERALS produced and exported through the Port of Antofagasta during the Years 1898 and 1899.*

Description of Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore	591	591,266	1,213	1,212,976
Copper, ingots	149	59,255	10	8,171
„ matte	623	137,038	627	211,000
„ ore	145	29,047	247	49,371
Gold	Kilos. 39	48,107	Kilos. 5	7,500
Lead, ingots	210	46,105	31	6,134
„ silver	2,054	410,772	1,198	239,505
„ ore	27	3,103	—	—
Silver	—	—	—	—
„ ingots	Kilos. 53,138	4,357,282	Kilos. 41,038	2,051,905
„ ore	17,253	17,252,792	20,068	20,068,278
„ sulphide... ..	87	2,620,410	70	2,112,000
Silver and copper ore	6	1,343	—	—
Tin, ingots	6,639	3,169,914	8,012	3,204,944
„ ore	429	270,102	53	34,472
Wolfram	94	46,926	40	20,203
Other minerals... ..	15	7,031	—	634,267
Total value in Dollars	—	29,050,493	—	29,860,726
„ „ £ sterling	—	£2,178,787	—	£2,239,554

Bonaire. (See DUTCH WEST INDIES.)

Borneo. (See BRITISH BORNEO and DUTCH EAST INDIES.)

Bosnia. (See AUSTRIA-HUNGARY.)

Brazil.

The fact that Brazil produces gold and precious stones leads to the idea that it is an important mining country. No doubt its mineral resources are great ; but judged by the actual output they are not properly utilized. Capitalists and prospectors are discouraged by unsatisfactory mining legislation, which appears to be the main reason why the mining industry is at so low an ebb.† No official statistics are published by the Brazilian Government.

In addition to diamonds and gold, Brazil is yielding coal, iron ore, manganese ore, and monazite sand. Petroleum and the ores of copper and lead exist in workable quantities.

* Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and *Estadística Comercial de la República de Chile correspondiente al Año de 1898 and Año de 1899*, Valparaíso.

† Acting Consul-General Rhind, "Trade of Rio de Janeiro for 1898." *Dipl. and Cons. Reports*, No. 2,284, Ann. Ser., 1899. [C. 9044-110], p. 27.

BRAZIL—continued.

Diamonds.*—Compared with the output of Kimberley, the total production of diamonds in Brazil, estimated at 40,000 carats, is at present insignificant. A powerful company has lately erected machinery for washing the diamondiferous gravel on a large scale, and a very great increase in the total output of the country is confidently expected. The most important diamond districts in Brazil are Diamantina, Grao Mogul, Chapada Diamantina, Bagagem, Goyaz, and Matto Grosso.

Gold.—The State of Minas Geraes which contains the famous St. John del Rey mines is the principal gold producer. In 50 years the Company yielded 47,340 kilos of gold valued at £5,178,657, at a cost of £3,502,895. The output of the State in 1899 was 148,000 ozs., worth £452,000.

Gold has also been found in Northern Brazil† on the Borders of French and British Guiana, which are both auriferous.

Manganese‡ mining is an industry of comparatively recent date in Brazil. The principal workings are at Miguel Burnier and Queluz in the province of Minas Geraes, respectively 287 miles (462 kil.) and 308 miles (496 kil.), from Rio. The ore is shipped thence to England and the United States. There are two mines near Nazareth in the State of Bahia.§

Monazite Sand|| is obtained near the town of Prado in the north of the State of Bahia, and the quantity raised is increasing.

Phosphate of Lime.¶—It is proposed to work the phosphate of lime which exists on the Island of Rata near the Island of Fernando da Noronha.

TABLE 395.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Diamonds *	Carats 40,000 (c)	(a)	(a)	—
Gold (exported)	Kilos. 3,359 **	458,299	Kilos. 4,603 †	452,000
Manganese ore ‡	26,417	(a)	Kilos. 65,000 (d)	66,000
Monazite || ... ..	Bags 3,858 (b)	19,064	Bags 5,238 (b)	(a)

* Beaumont, "A Journey to the Diamond Fields of Minas Geraes." *Dipl. and Cons. Reports*, No. 2,058, Misc. Ser., 1899 [C. 9045-22], pp. 10 and 12, and United States Consular Report, No. 424, May 1899.

† Consul Churchill, "Trade of Pará for the years 1898 and 1899." *Dipl. and Cons. Reports*, No. 2389, Ann. Ser., 1900 [Cd. 1-26], p. 6.

‡ Acting Consul-General Rhind, "Trade of Rio de Janeiro for the year 1899." *Dipl. and Cons. Reports*, No. 2,475, Ann. Ser., 1900 [Cd. 1-12], p. 24.

§ Scott, "The Manganese Ores of Brazil." *Proc. Iron & Steel Inst.*, Vol. LVII, 1900, p. 179.

|| Consul Nicolini, "Trade of Bahia for the year 1899." *Dipl. and Cons. Reports*, No. 2,470, Ann. Ser., 1900 [C. 2-107], p. 11.

¶ Consul Howard, "Trade of Pernambuco and District for the year 1898." *Dipl. and Cons. Reports*, No. 2,288, Ann. Ser., 1899 [C. 9044-114], pp. 9 and 10.

** Acting Consul-General Rhind, "Trade of Rio de Janeiro for the year 1898." *Dipl. and Cons. Reports*, No. 2,284, Ann. Ser., 1899 [C. 9044-110], p. 27.

(a) Not stated. (b) Exports of Bahia only. (c) Estimated production of Brazil.
(d) Produce of Minas Geraes only.

Bulgaria.*

Bulgaria possesses deposits of coal, lignite, and the ores of copper, iron, lead, and manganese. Gold is obtained from the sand of the rivers at the foot of the Balkans. Limestone and marble are quarried in several places.

The State works lignite mines at Pernik, 19 miles from the capital, and also at Bobov-Dol; the former produces 100,000 tons yearly and the latter 2,000.

TABLE 396.

QUANTITY of MINERAL produced during the Year 1899.

Mineral.	Quantity raised.
Lignite	Metric Tons. 102,000

Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinder, dug from the sides of volcanic cones, is utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England.

Limestone for local use is derived from Fuerteventura, and to a small extent from Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

Celebes (See DUTCH EAST INDIES).**Chili.**

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Other important exports are: borate of lime, coal, copper, guano, gold and gold ore, iodine, manganese ore, salt, and silver.

Coal.†—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota. Still further South there is coal of Miocene age extending to the Straits of Magellan.

Copper.†—The increased price of metal has brought about a great revival in copper mining, which though once the chief mineral industry of the country has been completely eclipsed by the nitrate of soda diggings.

* *La Bulgarie à l'Exposition Universelle Internationale de 1900 à Paris.* Paris, 1900, p. 43.

† Consul-General Sir Barry Cusack-Smith, "Trade of Chili for the year 1899." *Dipl. and Cons. Reports*, No. 2481, Ann Ser., 1900 [Cd. 1-118].

CHILI—continued.

*Nitrate of Soda.**—In the year 1899 there were 58 saltpetre works in operation, which produced 1,440,391 metric tons of nitrate of soda and 222 metric tons of iodine. Compared with the previous year there is an increase of 80,036 tons of nitrate and 40 of iodine. The diggings and works afforded employment to 18,914 persons, of whom 13,591 were Chilians. The principal port at which the nitrate is shipped is Iquique.

Salt.†—A bed of salt of unknown thickness and extending over an area of more than 120 square miles, near the Port Punta de Lobos, is being worked on an increasing scale. The export last year was about 10,000 tons.

TABLE 397.

QUANTITY and VALUE of MINERALS exported during the Years 1898 and 1899.†

Description of Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Bismuth... ..	322	4,508	—	—
Borate of Calcium	7,028	1,124,509	14,951	2,242,618
Borax	6	3,391	14	7,214
Clay	—	—	20	1,000
Coal	282,663	4,239,943	241,995	4,839,900
Cobalt ore	18	1,817	55	8,181
Copper, ingots	20,600	13,759,493	17,311	14,928,273
" matte	3,079	861,999	1,710	684,965
" ore	20,301	2,022,730	35,854	3,585,443
Copper and Gold, ingots	Kilos. 160	2,000	20	20,300
" " ore	24	2,433	58	8,720
Copper and Silver ore	87	17,392	184	36,799
Copper, Gold, and Silver ore... ..	6	1,300	12	2,633
Copper, Gold, and Silver matte	73	29,133	93	37,162
Copper and Silver matte	419	167,556	1,094	546,880
Fireclay	30	1,218	—	—
Gold	Kilos. 1,630	2,445,735	Kilos. 1,625	2,461,234
Gold ore... ..	8	2,554	12	6,051
Gold and Silver ores	269	57,635	370	129,416
Iodine	235	3,169,570	304	4,108,427
Lead, silver	13	13,596	171	34,221
Lime	1	21	1	42
Manganese ore	20,851	447,028	40,931	1,227,922
Nickel ore	3	3,000	—	—
Nitrate of Soda... ..	1,294,227	90,675,297	1,308,718	96,650,282
Phosphate of Lime	488	29,266	23,482	939,280
Silver, ingots	Kilos. 139,812	6,990,035	Kilos. 75,899	3,791,589
" ore	284	205,386	302	247,597
" matte	43	21,499	—	—
" sulphide... ..	290	434,740	339	1,017,110
Silver and Lead ores	12	1,557	32	4,844
Tin	8	4,900	8	4,979
Other Minerals... ..	—	1,400	—	64,521
Total Value in Dollars	—	126,742,641	—	137,637,603
" " " £ sterling	—	£9,505,698	—	£10,322,820

* *Memoria del Delegado Fiscal de Salitreras presentada al Señor Ministro de Hacienda en 1900.* Santiago de Chile, 1900, pp. 19 and 47.

† *Ibidem*, p. 65.

‡ Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and published in the *Estadística Comercial de la República de Chile correspondiente al año de 1899*, Valparaíso, 1900, p. 385.

China.*

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of copper, gold, iron, lead, quicksilver, silver, tin, and zinc. Petroleum and sulphur are found in addition to the metallic ores in the south-west; whilst salt is specially abundant in Sze-chuan,† in the extreme west, a province said to be highly favoured with other forms of mineral wealth.

The province of Chi-li‡ has yielded gold for many centuries. The metal occurs in quartz veins and in alluvial deposits; the output in 1898 was 50,000 ozs.

Coal and the ores of iron, lead and silver are said to abound in the province of Fohkien.§

The province of Kwei-chau|| is rich in coal, ores of copper, iron, and quicksilver.

The province of Shan-si¶ is remarkable for its great wealth of coal. At the present time the workings are comparatively shallow, and all the winding is done by hand. The total annual output, reckoned at 50,000 tons, is therefore no index of the great resources of the coalfields.

The province of Shan-tung** possesses deposits of coal, copper, diamonds, gold, iron, lead, and silver. The first-named mineral is the most important, and is already worked on a small scale and in a very primitive fashion in various parts of the province. No shaft is more than 30 yards (28 m.) deep, and the usual depth is only about 20 yards. It is expected that the harbour of Kiao-chou will be connected by rail with the Wei-hsien coalfield, the first of importance, in two years.††

An extensive bed of hæmatite in the neighbourhood of the I-chou-fu coalfield, which can be worked opencast, may be of importance to Kiao-chou in the future.

Consul Jamieson,‡‡ while admitting the great mineral wealth of the province of Yunnan, is of opinion that the difficulties in the way of working are so formidable that capital cannot be profitably employed in mining enterprises, at least in the southern and western sections of the province.

No mineral statistics are published by the Chinese Government.

The Director of the United States Mint states that 9,146 kilos. of fine gold of the estimated value of £1,248,193 were produced in 1898.§§

Cochin China. (See INDO-CHINA.)

* The "salt wells of China." *Jour. Soc. Arts*, Vol. XLVI., 1898, p. 385.

Fearon and Allen.—"The Chinese, and recent industrial progress in China" *Eng. Mag.*, Vol. XVI., 1893, p. 166.

M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.

Jameson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 365.

Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV., 1898, p. 491.

† Upcraft.—"The Salt Wells of Sze-chuan, China." *Eng. Min. Jour.*, Vol. LXIX., 1900, p. 525.

‡ Hoover.—"Metal Mining in the Provinces of Chi-li and Shantung, China." *Proc. Inst. Min. and Met.* Vol. VIII., 1900, pp. 324-331.

§ Consul Mansfield.—"Trade of Amoy for the year 1899." *Dipl. and Cons. Reports*, No. 2502, Ann. Ser. 1900 [Cd. 1-139], p. 8.

|| Prospectus of the Anglo-French Quicksilver and Mining Concession (Kwei-chau province) of China, Ltd., March 1899.

¶ Drake.—"The Coalfields around Tse Chou, Shan-si." *Trans. Amer. Inst. M. E.* New York, 1900.

** Buchrucker, "Ueber eine bergmännische Forschungsreise in der Provinz Schantung." *Zeitschr. f. prakt. Geologie*, 1899, p. 206.

†† Consul Hopkins, "Trade of Chefoo for the year 1898." *Dipl. and Cons. Reports*, No. 2,307, Ann. Ser. 1899 [C. 9044-133], p. 11.

‡‡ China, No. 3 (1898). *Consular Report on the trade of Yunnan*. [C. 9083] 1898.

§§ *Report of the Director of the United States Mint for 1899*, Washington, 1900.

Colombia.*

Coal.—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

Copper.—Deposits are known to exist, but they are unworked.

Emeralds.—The famous mines of Muzo have been worked continuously to obtain this gem for more than three centuries.

Gold.—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

Manganese ore.†—This ore is worked about 40 miles east of Colon.

Salt.—Rock salt is mined near Bogota.

TABLE 398.

QUANTITY and VALUE of GOLD, MANGANESE ORE, and SILVER produced during the Years 1897 and 1898.

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
		£		£
Gold (Fine)‡ Kilos.	3,351	457,330	3,405	464,723
Manganese ore§ ... Metric Tons	8,382	(Not stated.)	11,176	(Not stated.)
Silver (Fine)‡ Kilos.	157,022	1,340,000||	170,598	1,455,873||

Congo Free State.¶

No mines have as yet been worked by Europeans ; but the natives of the Upper Congo dig a little iron ore and copper ore, and extract the metals for the purpose of making weapons, tools and utensils.

Corea.

Corea appears to be rich in minerals, especially in the province of Ping-Yang, where coal and gold are being worked. Large deposits of smokeless coal exist in the country.**

According to the consular report,†† export of gold from Corea in 1899 was £293,338, or more than twice as much as in 1896. The gold is mainly obtained from quartz mines worked by American and European companies.

* Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898.

† *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.

‡ *Report of the Director of the United States Mint for 1899*, Washington, 1900.

§ *The Mineral Industry*, Vol. VIII. 1899, by R. P. Rothwell, New York and London, 1900. p. 421.

|| Coining value of fine silver.

¶ Information furnished by the Département des Finances, Brussels.

** *Eng. Min. Jour.*, Vol. LXVII., 1899, p. 676.

†† Jordan, "Trade of Corea for the year 1899." *Dipl. and Cons. Reports*, No. 2,511, Ann. Series, 1900 [Cd. 352-7]. pp. 19, 31.

Costa Rica.*

Mining for gold in Costa Rica has hitherto met with so little success that the industry is practically at a standstill.

Cuba.†

The following minerals have been more or less constantly mined in Cuba :—

Asphalt and Petroleum.—There are large deposits in several places.

Clay.—Clay fit for making bricks and tiles is abundant.

Copper ore.—Copper ore has been mined on an extensive scale, particularly at Cobre, in the province of Santiago de Cuba. It occurs in many places in the eastern part of the island.

Gold.—This metal is said to abound in the provinces of Santa Clara and Santiago.

Iron ore.—The latter province possesses extensive deposits of iron ore. The Spanish-American Iron Co. and the Juragua Iron Co. were the two principal producers in 1899, their combined exports during that year amounted to 368,759 tons.

Limestone.—This rock abounds everywhere.

Manganese ore.—This ore is extremely abundant in the province of Santiago. The rich deposits are likely to be utilized in the near future.

Curaçao. (See DUTCH WEST INDIES.)

Denmark.‡

Chalk and calcareous marl are quarried near Aalborg. The annual output is from 12,000 to 15,000 tons.

Bog iron ore exists in Jutland,§ and in years gone by it was occasionally worked and smelted on a small scale.

GREENLAND.||

The quantity of cryolite obtained from Ivigtut during the year 1898 was 8,150 tons, and in 1899 was 8,874 tons.

During the summer months 148 persons were employed in 1898, and 100 in 1899. These numbers were reduced during each winter by about 50 men.

No accidents occurred during the years 1898 or 1899.

ICELAND.

A small quantity of transparent calc spar for optical instruments is exported annually.

* Consul Harrison, "Report for the year 1896 on the Trade and Commerce of Costa Rica." *Dipl. and Cons. Reports*, No. 1,913, Ann. Series, 1897 [C. 8277-131].

† Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines." *Eng. Mag.*, Vol. XVII., 1899, p. 242. Swauk, "The American and Foreign Iron Trades in 1899." *U.S. Geol. Survey*, Washington, 1900.

‡ Consul Boyle, "Trade and Agriculture of Denmark for the year 1898." *Dipl. and Cons. Reports*, No. 2,141, Ann. Series, 1898 [C. 9044-127].

§ *Glückauf*, Vol. XXXIV., 1898, p. 872.

|| Official Report furnished by the Danish Government.

DUTCH EAST INDIES—BORNEO—*continued.*

are using the crude oil as fuel, and also the liquid residue from the petroleum refineries. An oil-tank steamer of 6,000 tons has lately brought from Borneo to London a cargo of petroleum in bulk, using solely oil as fuel without employing any coal.

CELEBES.*

Gold is known to occur in various parts of Celebes, and several companies are now working the deposits of the precious metal. The Soemalata Mining Co. obtained 247 tons of ore in 1897 and 39 tons in 1898, and the Palehle Mining Co. obtained 83 tons of ore in 1898.

JAVA.

Among the mineral productions of Java may be named coal, gold, iodine, manganese ore, and petroleum.

Coal.—798 tons of coal were produced from a mine in the Sedan district during the year 1895–96.

Gold.—The natives, especially the women, obtain some gold by washing river sand in wooden bowls. Several gold mining companies have been started with European capital, and rich gold ore is being exported to Liverpool.

Iodine.—The Goenoeng Kendeng district has springs containing iodides in solution, from which 2,762 kil. of crude iodide of copper were manufactured in 1897, and 2,623 kil. in 1898.

Manganese.—Manganese ore is produced in the regencies of Pengasih and Nanggoelan. The output was 5,200 tons in 1897 and 4,800 tons in 1898.

Petroleum.†—Petroleum occurs in various parts of the island, and is obtained on a large scale by borings. The combined output of the wells at Wonokromo and Blora increased from 1,513,242 cases (1 case = 37·8 litres) in 1898 to 1,638,569 cases in 1899.

SINGKEP.*

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

TABLE 401.

Year.	Number of Mines at Work.	Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1897–98 	16	1,658	11,139	685
1898–99 	15	2,032	11,237	678

About two-thirds of the persons were engaged at the tin diggings proper, and one-third in getting charcoal and smelting the ore.

SUMATRA.*

Coal.—The Dutch Government is working collieries in the Ombilien coalfield, which is now connected by rail with the Port of Padang. One of the principal seams is 10 feet thick, and the other from 26 feet to 39 feet. The coal is said to be very free from ash.

Gold.—Sumatra contains payable deposits of gold, and a stamp mill and cyanide plant are now being erected at Redjang Labong in the southern end of the island.

* Official Return furnished by the Colonial Department of the Dutch Government.

† Consul Davids, "Trade of Java for the Year 1899." *Dipl. and Cons. Rep'ts*, No. 2,452, Ann. Series, 1900 [Cd. 1–8 89], p. 7.—*Petroleum*, Vol. I., London, 1900, p. 179.—*Shipping and Mercantile Gazette and Lloyd's List*, London, 22nd June, 1900.

DUTCH EAST INDIES—SUMATRA—*continued.*

Petroleum.—Sumatra's principal petroleum wells are on the east coast at Langkat; they yielded 4,564,987 cases (1 case=37·8 litres) of refined petroleum in 1897 and 5,479,694 in 1898. The oil is exported to the Straits Settlements, Burmah, Siam, Cochin China, and elsewhere.

TABLE 402.

NUMBER OF PERSONS EMPLOYED and QUANTITY OF COAL PRODUCED at COAL MINES in 1898 and 1899.

Year.					Number of Persons Employed.	Quantity of Coal produced.
						Metric Tons.
1898	...	...	...	...	1,996	149,434
1899	...	...	...	...	2,316	181,743

Dutch Guiana or Surinam.*

The estimated quantity of gold produced in 1899 was 893 kilograms, valued at fl. 1,223,680 or £101,973. It was obtained almost exclusively from alluvial deposits.

Dutch West Indies.*

ARUBA.

Gold mining is carried on by an English company. At present the output is small.

Phosphate of lime was quarried with great profit between the years 1884 and 1892; in spite of lower prices the deposits are still being worked, and the quantity exported last year was 20,620 metric tons.

BONAIRE AND ST. MARTIN.

Salt is obtained by the natural evaporation of sea water at both these islands. In 1898 the export of salt from Bonaire was 36,120 barrels, valued at 18,080 florins or £1,507, and in 1899 was 28,928, valued at fl. 14,464 or £1,205. From St. Martin in 1898 the export was 51,908 hectolitres, valued at fl. 36,855 or £3,071, and in 1899 24,414 hectolitres, valued at fl. 17,334 or £1,444.

CURAÇOA.

The phosphate of lime mines in this island have been at a standstill since 1895. The amount of bay salt produced does not appear to be known exactly.

Ecuador.†

It is said that gold abounds, though the yearly output is small. It is obtained mainly from alluvial deposits, but the auriferous veins are being tested on a commercial scale.

There are also deposits of anthracite, copper ore, petroleum, salt, and silver ore.‡

* Official Return furnished by the Colonial Department of the Dutch Government.

† Consul Söderström, "Trade of Quito for the year 1897." *Dipl. and Cons. Reports*, No. 2,101, Ann. Ser., 1898 [C. 8648-123].—Consul Chambers, "Trade of Guayaquil for the year 1898." *Dipl. and Cons. Reports*, No. 2,246, Ann. Ser., 1899 [C. 9044-72].—*Report of the Director of the United States Mint for 1899*.

‡ *Mining Journal*, Vol. LXX., 1900, p. 620.

ECUADOR—*continued.*

One article of commerce of a country possessing active volcanoes is naturally pumice stone.

TABLE 403.

ESTIMATED QUANTITY and VALUE of GOLD and SILVER produced in 1898.

1898.			
Fine Gold.		Fine Silver.	
Quantity.	Value.	Quantity.	Coining Value.
Kilos. 59	£ 8,058	Kilos. 240	£ 2,053

Egypt.

Little or nothing is being done in the way of mining at the present day. Granite, sandstone, and limestone are quarried.

Gems.—Emeralds were obtained by the ancients from mines at Jebel Zebara and Jebel Sikait in the eastern desert of Egypt, and it is proposed to re open them next year. The turquoise mines in the peninsula of Sinai, likewise worked by the ancients, still yield small quantities of this gem.

Gold.—A recent report by Mr. Alford* gives interesting facts concerning the old gold mines worked in very early times at various places between the Red Sea and the Nile; they may possibly once more become a source of wealth to Egypt.

Petroleum.†—The mineral oil at Jebel Zeit on the west shore of the Gulf of Suez is again being examined with a view to ascertaining whether it is worth working.

Phosphate of Lime.‡—Large deposits of phosphate of lime have been discovered in several parts of the country.

Salt.§—The natural evaporation of the waters of Lake Mareotis leaves a considerable quantity of salt, and this source of supply is still largely utilized as it has been for many years past.

Soda.¶—It is now stated that Wady Natron, well known to the ancients, is capable of supplying the natural carbonate of soda at lower prices than are paid for the artificial product. If this proves to be the case, a large output of natural soda is expected. The mineral is found: (1) dissolved in the water of certain lakes; (2) in the form of a crust lying on the surface of the water, or falling to the bottom; (3) as an efflorescence in marshes adjoining the lakes.

SOUDAN|| (*see also* FRENCH SOUDAN).

The possible mineral wealth of the Soudan is practically unknown. Gold mines were once worked in the mountains south of Fazogl. Iron ore is found in Bahr Ghazal Province and also in Darfur.

Formosa.¶

The Island of Formosa contains deposits of coal, gold, sulphur, and petroleum.

Coal is mined near Kelung on a small scale, and a few thousand tons are exported annually. It is said that the Japanese are extracting large quantities of gold.

* A report upon ancient and prospective gold mining in Egypt, London, 1900.

† U.S. Consul-General Long. *Consular Reports*, No. 237, Vol. LXIII., June, 1890.

‡ "A report on the Phosphate deposits of Egypt." *Geological Survey, Public Works Ministry*, Cairo 1900.

§ *Prospectus of the Egyptian Salt and Soda Company, Ltd.*, 6th November, 1899.

¶ Despatch from H.M. Agent and Consul-General at Cairo, enclosing a Report on the Soudan by Sir W. Garstin, K.C.M.G.,—Egypt, No. 5 (1899) [C. 9332].

¶ *Mining Journal*, Vol. LXIX., 1899, p. 1024, and *Engineering*, Vol. LXVIII., 1899, p. 337.

France.

*Antimony.**—Sulphide of antimony has been worked for many years at Cap Corsica in Corsica. It has lately been discovered in the Pyrenees, where a mine is yielding 5,000 tons of ore a year.

Coal.—Coal mining is by far the most important mineral industry in France, for its collieries employ more persons than all the other mines and quarries put together. 62 per cent. of the coal obtained in France during the year 1899 was produced in the two departments of the Nord and the Pas-de-Calais. The mines of the important Anzin Company near Valenciennes yielded 2,973,000 tons, or 25,000 tons less than in the previous year, whilst the output of the Lens Company's collieries in the Pas-de-Calais reached 3,011,000 tons, or 85,000 tons more than in 1898.

The total quantity of brown coal produced during the year 1899 amounted to 606,564 tons, or an increase of 77,000 tons. The quantity of peat obtained in 1899 was less than in the previous year.

Iron ore.—88 per cent. of the iron ore raised in France is oolitic hydrated peroxide, which is principally obtained from mines and openworks near Nancy, Longwy, and Briey, in the department of Meurthe-et-Moselle. The iron-producing strata are at the top of the Liassic rocks, and are of the same geological age as those which are so largely worked in the adjoining territories of Lorraine and Luxemburg.

Numerous recent borings have proved the existence of the beds of iron ore over a very considerable area, and the amount of workable iron ore awaiting extraction is stated to be enormous. New mines are being started, and blast furnaces and steel works erected, so that the Longwy district will soon become the most important metallurgical centre in France.

Iron pyrites.—Nearly all the iron pyrites is the produce of the Sain-Bel mines (Rhône).

Lead ore.—The principal lead mine is at Pontpéan in Brittany.

Manganese ore.—Carbonate of manganese is worked on a large scale at Las Cabesses mine (Ariège), and pyrolusite at the Romanèche and Grand-Filon mines (Saône-et-Loire).

Phosphate of Lime.—M. David Levat† has recently made some interesting and important discoveries of black phosphate of lime in the Pyrenees.

Salt.—Much of the salt comes from a thick bed of rock salt in the Upper Trias in the department of Meurthe-et-Moselle. The bay-salt is the result of the evaporation of sea-water in marshes on the shores of the Atlantic and the Mediterranean.

Zinc ore.—The two largest workings for zinc are those of Malines (Gard) and Bormettes (Var).

TABLE 404.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1898 and 1899.
1898.†

Kind of Mines.	Under-ground.				Above-ground.					Total. Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	5,446	6,555	93,394	105,395	4,675	2,580	5,489	30,487	43,231	148,626
Other mines ...	60	195	9,223	9,478	214	217	286	3,280	3,997	13,475
Total ...	5,506	6,750	102,617	114,873	4,889	2,797	5,775	33,767	47,228	162,101

* Consul Holmes, "Trade of Corsica for the year 1899." *Dipl. and Cons. Reports*, No. 2418, Ann. Ser., 1900 [Cd. 1-55], p. 11.

† *Annales des Mines*, Vol. XV. Série 9, 1899, pp. 5-100.

‡ *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1898*, p. 39.

FRANCE—continued.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1898 and 1899—continued.

1899.*

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	5,622	6,656	97,967	110,245	4,705	2,669	5,571	30,735	43,680	153,925
Other mines ...	73	173	10,745	10,991	275	297	351	4,124	5,047	16,038
Total ...	5,695	6,829	108,712	121,236	4,980	2,966	5,922	34,859	48,727	169,963

TABLE 405.

PERSONS EMPLOYED at QUARRIES during the Years 1898 and 1899.†

Kind of Quarries.	1898.			1899.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Underground ...	13,694	8,874	22,568	13,581	8,988	22,569
Open ...	—	108,152	108,152	—	109,553	109,553
Total ...	13,694	117,026	130,720	13,581	118,541	132,122

TABLE 406.

QUANTITY and VALUE of the MINERALS raised from MINES and WORKINGS other than QUARRIES during the Years 1898 and 1899.†

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Anthracite ...	1,654,000	—†	1,644,579	—†
Antimony ore ...	4,433	325,228	7,392	600,463
Arsenic ...	1,552	108,759	2,553	103,400
Bituminous shale, limestone, &c. ...	229,108	1,669,438	258,809	1,848,285
Brown coal ...	529,977	4,646,498	606,564	5,480,905
Coal ...	30,172,127	358,506,919§	30,611,569	402,064,660§
Copper ore ...	382	14,205	2,021	322,080
Gold quartz ...	30	1,200	320	7,000
Iron ore... ...	4,731,394	16,037,133	4,985,702	18,153,331
Iron pyrites ...	310,972	3,926,210	318,832	4,138,114
Lead ore, argentiferous ...	23,342	3,201,132	17,505	2,715,729
Manganese ore ...	31,935	831,055	39,897	1,116,686
Peat ...	104,265	1,507,431	99,230	1,513,187
{ Rock salt and salt from brine	303,784	4,371,108	283,161	5,160,518
{ Salt contained in brine used	245,505	1,473,030	302,327	1,813,362
{ for making soda ...	449,994	4,731,461	608,044	5,560,278
{ Salt from sea water ...	9,818	135,704	11,744	144,419
Sulphur-bearing limestone ...	85,550	7,377,905	84,813	9,577,011
Zinc ore ...	—	—	—	—
Total value in Francs ...	—	408,864,416	—	460,319,428
„ £ sterling ...	—	£16,354,577	—	£18,412,777

* Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1899.

† Ditto, 1898 et 1899.

‡ Value included with coal.

§ Including value of anthracite.

FRANCE—continued.

TABLE 407.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1898 and 1899.*

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Common earth	375	4,301	225	1,106
Pyrite	—	—	74	39,238
Gypsum	38	26,600	45	31,500
Iron	2,763	36,690	4,058	57,620
Lead	36,723	335,667	48,215	419,937
Antimony	1,072,025	26,798,102	1,144,271	28,667,021
... ..	50,115	742,140	46,075	685,415
China clay	68,412	1,207,396	64,200	1,324,030
Fireclay	295,913	1,742,659	367,432	1,879,454
Potter's clay	5,125,439	6,167,728	5,472,362	7,088,387
Stucco	225	11,873	210	12,459
Alumina	66,482	1,413,599	68,650	1,527,202
Spar	3,077	46,155	5,140	79,440
Common earth	3,850	16,747	3,900	16,965
Plaster	1,462,304	13,191,070	1,385,867	12,598,880
Manure	290,611	1,201,761	250,079	1,085,162
(Pyritiferous)	19,545	87,952	20,030	90,135
... ..	4,325,495	38,527,123	4,672,799	40,052,764
Graphitic stone	211	123,013	247	116,336
Sodium carbonate	30	1,500	50	2,500
... ..	124,161	4,969,154	191,030	7,034,865
... ..	1,217,861	1,475,109	1,238,224	1,505,982
Ones	38,929	3,636,173	41,535	3,826,210
... ..	33,780	790,060	32,750	807,365
... ..	54	3,000	60	3,600
Gypsum	568,483	9,493,389	621,799	10,536,618
Hydrate of lime	568,558	15,579,787	645,868	16,670,726
Gravel, and flint	4,953,217	8,020,547	5,506,966	9,211,804
Roofing	330,309	20,674,143	299,307	18,076,812
Slabs	1,318	192,760	1,162	180,016
Talc, and asbestos	9,955	191,615	4,690	165,250
for building	9,989,416	49,453,685	10,587,789	52,228,219
(broken for ballast)	11,915,093	25,206,263	12,523,845	26,950,213
for mosaic work	2,500	62,500	2,575	63,625
Stones	1,899	311,315	2,009	391,130
Total value in Francs	—	231,741,576	—	243,428,986
„ £ sterling	—	£9,269,663	—	£9,737,159

TABLE 408.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.*

Kind of Mines	1898.						1899.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Anthracite, brown and coal.	133	26	159	1.26	.60	1.07	170	29	208	1.62	.66	1.29
Mines ..	29	8	37	3.06	2.00	2.75	23	5	28	2.11	1.02	1.78
Others ..	162	34	196	1.41	.72	1.21	202	34	236	1.67	.70	1.39

* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1898 and pour l'année 1899.

FRANCE—continued.

TABLE 409.

DEATHS from ACCIDENTS at QUARRIES during the Years 1898 and 1899.*

Kind of Quarries.	1898.						1899.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Underground ..	44	2	46	3.21	23	2.04	40	5	45	2.87	55	1.95
Open	—	100	100	—	.91	.91	—	123	123	—	1.11	1.11
Total	44	102	146	3.21	.87	1.12	40	128	168	2.87	1.07	1.25

France is now almost entirely free from explosions of fire-damp. The worst accident in 1899 was the fall of a cage down a shaft owing to the breakage of the winding rope. The sixteen men in the cage were killed.

French Guiana.†

Like the other Guianas, the French Colony is auriferous, and it is probable that its resources as a gold-producing country are to a great extent undeveloped.

The production of gold rose rapidly from 1,600 Kilos. in 1890 to 6,000 Kilos. in 1894 since then it has been diminishing, and the output for 1899 is stated to be 2,600 Kilos. valued at 7,800,000 francs or £312,000.

The little island called Grand-Connétable is said to be entirely composed of phosphat of lime; 6,605 tons were raised in 1894; no later figures are available.

TABLE 410.

QUANTITY of GOLD produced in 1898 and 1899.

1898.				1899.			
Gold.				Gold.			
Quantity.	Value.			Quantity.	Value.		
Kilos. 2,321	{ Francs ... 6,388,000 £ sterling 255,520			Kilos. 2,600	{ Francs ... 7,800,000 £ sterling 312,000		

French Possessions (See ALGERIA, FRENCH GUIANA, FRENCH SOUDAN, INDO-CHINA, IVORY COAST, MADAGASCAR, NEW CALEDONIA, SENEGAL, and TUNIS).

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1898 and pour l'année 1899.*

† Pélatan "Les richesses minérales des colonies françaises." *Revue universelle*, Liège, Vol. LI., 1900, p. 1.

French Soudan.

Eighty-four kilograms of fine gold, valued at 289,000 francs, were exported in 1898.*

The Western Soudan is largely supplied with salt obtained from old dried-up salt lakes at Tandeni and Sebka d'Idjil. In 1898, 2,348 tons of this salt, worth £80,000, were passed through the Customs into the French Soudan.

German East Africa.†

Coal, gold, iron ore, garnets, mica, and salt are known to exist in the Protectorate.

A rich deposit of coal has been discovered‡ close to the north end of Lake Nyassa, and it will be of importance for the steamship service. It is reported that considerable quantities can be raised without sinking any shafts.‡ Coal has also been discovered near Langenburg on Lake Nyassa, and near Lindi on the east coast.§

Gold has been discovered near Lake Victoria Nyanza and in various places in the Tabora district.§

Bornhardt|| considers that some deposits of garnets and mica promise good results.

German Empire.

The importance of the mining industry of the German empire is apparent from the following tables, which show that in 1899 its mines employed 520,127 persons, and produced nearly 136 million tons of coal, and 12 million tons of iron ore, besides other minerals, with a total value of nearly 52 millions sterling. The progress of mining during the last 30 years has been enormous. In 1871 the total value of minerals raised was rather more than £15,000,000 sterling; in 1899 it had risen to £52,000,000 sterling. This rise is largely due to the increased output of coal.¶

Amber.—The amber workings near Königsberg have been taken over by the State, which now has command of the trade. The mineral is obtained entirely by underground mining, the old methods of extraction by dredging, diving, and open quarrying are now things of the past. A large trade is carried on in pressed amber.

Coal.—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany; the principal workings are in the provinces of Brandenburg and Saxony.

There are three principal coal-mining districts in Prussia: (1) The Lower Rhine and Westphalian Basin, which is by far the most important; (2) Silesia, and especially Upper Silesia; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age; near Hanover there are extensive workings in the Wealden beds.

Copper.—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1898*, p. 87.

† "Ueber die Kohlengewinnung im nördlichen Nyassagebiet." *Glückauf*, Vol. XXXIV., 1898, p. 906; and Sir F. Lascelles, "Report on the German Colonies in Africa," No. 432, Misc. Ser. [C. 8640-3], 1897, pp. 4 and 17.

‡ "Steinkohlen in Deutsch-Ostafrika." *Glückauf*, Vol. XXXVI., 1900, p. 193.

§ Townley, "German Colonies for the year ending 30th June, 1899." *Dipl. and Cons. Reports*, No. 528. Misc. Ser., 1900. [Cd. 2-11], p. 22; and Consul Dundas, "German East Africa, 1892-1899." *Dipl. and Cons. Reports*, No. 535. Misc. Ser., 1900. [Cd. 353.]

|| Bornhardt, "Ueber die bergmännischen und geologischen Ergebnisse seiner Reisen in Deutsch-Ostafrika." *Zeitschr. d. D. geol. Ges.*, Vol. L., Berlin, 1899, and *Zeitschr. f. prakt. Geologie*, 1899, p. 217.

¶ *Exposition Universelle de 1900, Catalogue Officiel de la Section Allemande*, p. 277.

GERMAN EMPIRE—continued.

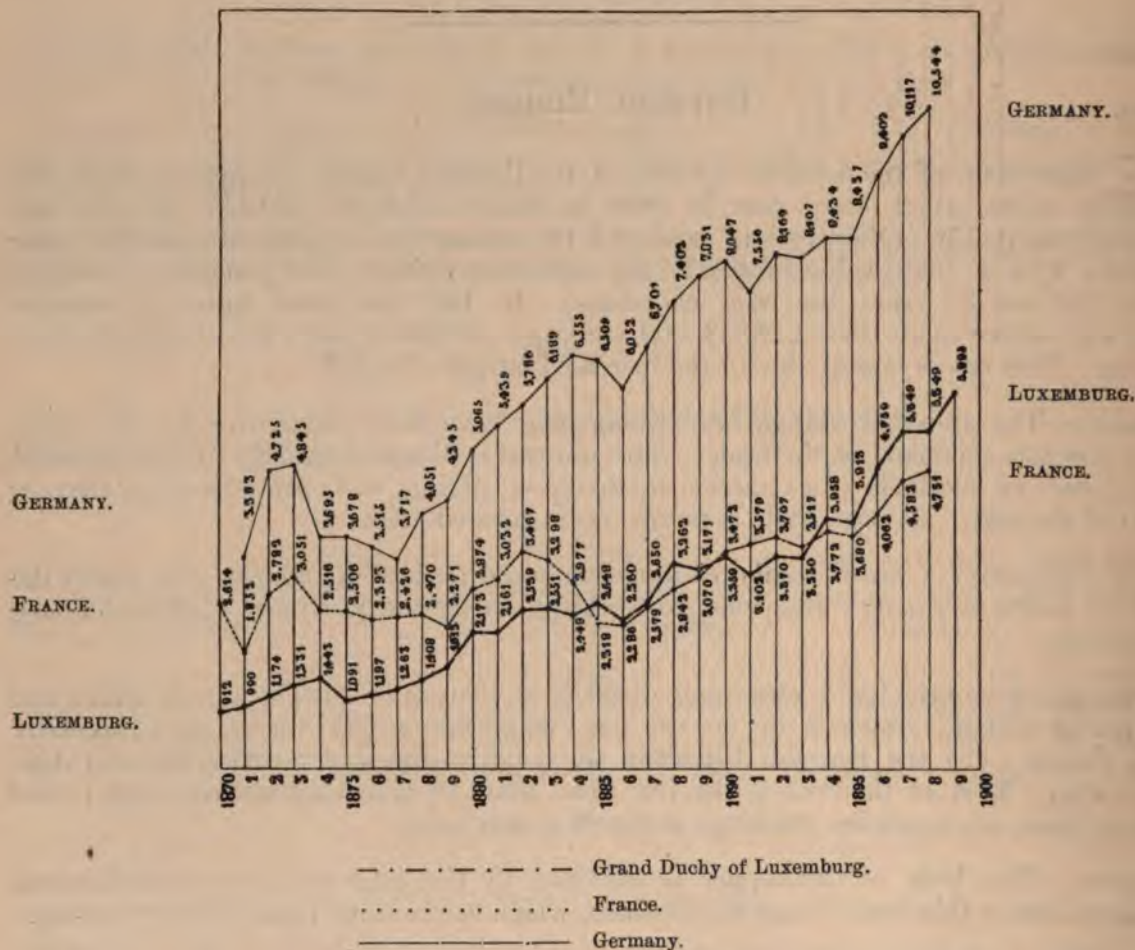
Iron Ore.—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. These sources of supply are, however, of far less importance than the stratified ore of Jurassic age in Luxemburg and Lorraine. Indeed, the iron-field upon the confines of France and Germany is at the present moment the greatest ore-producer of Europe. It is estimated that Luxemburg possesses 14 sq. m. (37 sq. km.), Germany 160 sq. m. (414 sq. km.), and France 208 sq. m. (540 sq. km.) of iron territory, in which ore can be raised at a profit. The so-called "iron-ore formation" consists of five main beds of oolitic iron ore interstratified with marl and limestone, with an average thickness of 105 ft. (32 m.) of which rather more than one-half is available iron ore. The ore contains on an average 36 per cent. of iron and 1.7 per cent of phosphoric acid.*

The large increase in the output of iron ore in France, Germany and Luxemburg, as shown by M. Dondelinger's excellent diagram, Fig. 13, is due to the resources of this great iron-field.

FIG. 13.

TOTAL OUTPUT OF IRON ORE IN FRANCE, GERMANY AND LUXEBURG.

Unit 1,000 Metric Tons.



Germany, beginning with little more than 3 million tons in 1871, produced in 1898 10½ million tons of ore; France, with 2½ millions in 1870, yielded about 4½ millions in 1898; the Grand Duchy of Luxemburg, with less than 1 million in 1870, yielded 6 millions in 1899.

* Hoffmann, "Das Vorkommen der oolithischen Eisenerze (Minette) in Luxemburg und Lothringen." *Glückauf*, Vol. XXXV., 1899, p. 640.

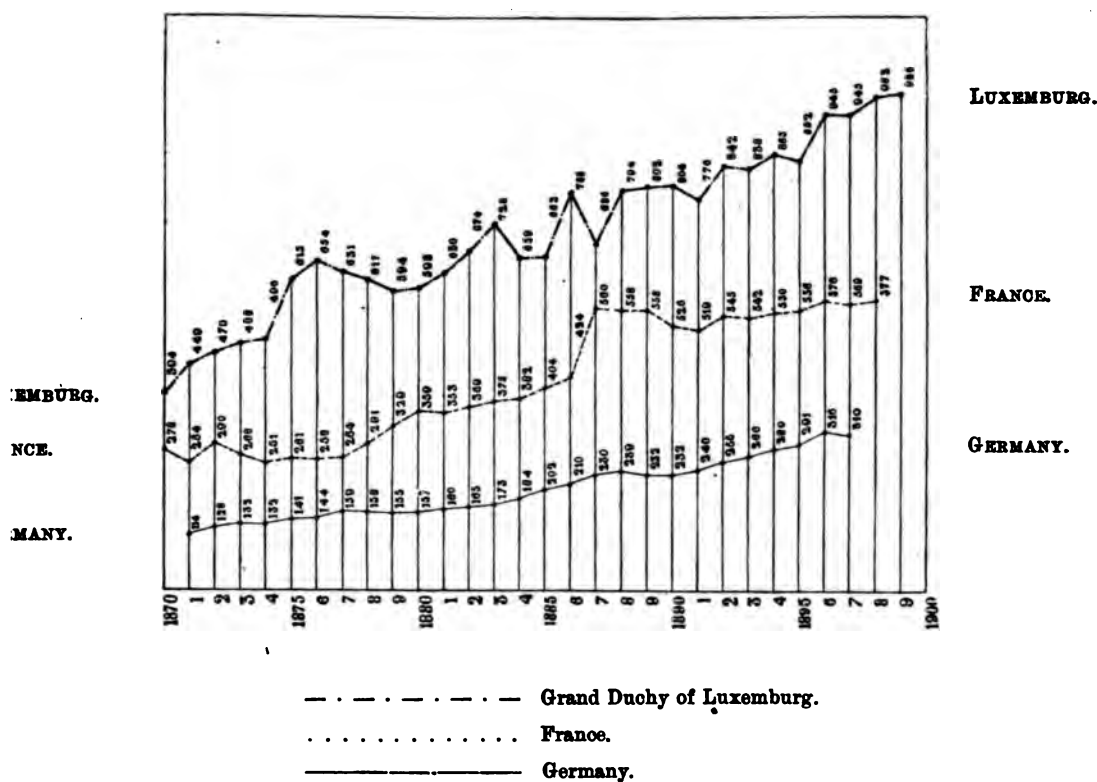
† Dondelinger, *Exposition Universelle de 1900, Grand Duché de Luxembourg. Exposition de l'Administration des Mines.*

GERMAN EMPIRE—continued.

owing, no doubt, to improved methods of working and labour-saving appliances, the output per man has risen likewise. The high output of the Luxemburg miner is due to the fact that most of the workings are open quarries.

FIG. 14.

ANNUAL OUTPUT OF IRON ORE PER WORKING MINER. UNIT 1,000 METRIC TONS.



Lead Ore.—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Silesia.

Salts.—In no country in the world is there such an abundance of potassium salts as in Germany. They are mined in the province of Prussian Saxony and the Duchy of Silesia; of late years Hanover has had a share in the production of these important minerals, and a mine in Brunswick added to the yield in 1897. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

Zinc Ore.—Upper Silesia is the mainstay of the German zinc industry.

An amended code* of regulations for the mines included in the Clausthal district was issued on the 26th September, 1899, and contains many useful rules for the prevention of accidents.

* Zeitschr. B. H. S. W. Vol. XLVIII., 1900, p. 28.

GERMAN EMPIRE—continued.

TABLE 411.

PERSONS EMPLOYED at the MINES of the GERMAN EMPIRE.

Mineral.	1898.*				1899.†			
	Under-ground.	Above-ground.		Total Under and Above Ground.	Under-ground.	Above-ground.		Total Under and Above Ground.
		Males.	Females.			Males.	Females.	
I.— <i>Coals and Asphalt.</i>								
Asphalt	107	133	—	240	116	121	—	237
Brown coal	20,046	21,675	1,091	42,812	20,404	23,205	1,136	44,745
Coal... ..	274,445	78,626	4,624	357,695	290,951	82,796	4,828	378,575
Graphite	144	72	—	216	774	402	—	1,176
Petroleum	—	441	—	441	—	491	—	491
Total	294,742	100,947	5,715	401,404	312,245	107,015	5,964	425,224
II.— <i>Salts.</i>								
Boracite	—	—	—	—	—	—	—	—
Kainite	1,232	1,140	3	2,375	1,309	1,344	9	2,662
Magnesium salts	—	—	—	—	—	48	—	48
Potassium salts other than kainite ...	4,660	2,444	3	7,107	4,894	2,901	3	7,798
Rock salt	501	347	9	857	470	350	10	830
Total	6,393	3,931	15	10,339	6,673	4,643	22	11,338
III.— <i>Ores.</i>								
Arsenic ore	190	198	—	388	193	191	—	384
Cobalt, nickel, and bismuth ores ...	455	156	21	632	446	155	28	629
Copper ore	11,359	3,093	2	14,454	11,725	3,183	3	14,911
Iron ore	22,534	8,872	1,266	32,672	23,971	9,453	1,436	34,860
Iron pyrites	336	183	—	519	333	199	—	532
Lead ore	7,758	4,860	390	13,008	8,238	5,211	354	13,803
Manganese ore	299	81	4	384	437	87	3	527
Silver and gold ores	2,674	970	1	3,645	2,382	832	—	3,214
Tin ore	13	29	—	42	14	33	—	47
Uranium and tungsten ores	30	27	—	57	32	40	—	72
Zinc ore	7,907	3,962	2,278	14,147	7,991	4,139	2,452	14,582
Other ores	1	—	—	1	2	2	—	4
Total	53,556	22,431	3,962	79,949	55,764	23,525	4,276	83,565
Total for the German Empire	354,691	127,309	9,692	491,692	374,682	135,183	10,262	520,127
Grand Duchy of Luxemburg—iron ore	3,268	2,380	—	5,648	3,714	2,343	—	6,057

* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1899, Berlin, IV. Heft.

† " " " " " " 1900 " "

GERMAN EMPIRE—continued.

TABLE 413—continued.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1898 and 1899—continued.

Mineral.	1898.		1899.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES—cont.	Metric Tons.	Marks.	Metric Tons.	Marks.
Manganese ore	43,354	447,145	61,329	711,265
Silver and gold ores	14,702	1,882,575	13,506	1,918,897
Tin ore	51	14,202	72	40,020
Uranium and tungsten ores	51	46,519	50	51,771
Vitriol and alum ores, other than iron pyrites.	188	1,128	533	3,478
Zinc ore	641,706	22,047,276	664,536	35,419,792
Total value	—	108,646,240	—	132,109,174
Total value for the German Empire in marks.	—	927,748,721	—	1,038,297,037
Total value for the German Empire in £ sterling.	—	£46,387,436	—	£51,914,852
Grand Duchy of Luxemburg—iron ore	5,348,951	11,147,349	6,014,394	12,989,818

TABLE 414.

QUANTITY and VALUE of MINERALS produced from BRINE, &c. WELLS during the Years 1898 and 1899.

Mineral Solution.	1898.*		1899.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
1. Alkaline sulphates :—				
(a.) Potassium sulphate... ..	18,853	3,053,588	26,103	4,110,237
(b.) Potassium and magnesium sulphate.	13,982	1,037,939	9,765	780,252
(c.) Sodium sulphate	69,111	1,810,037	69,216	1,768,731
2. Earthy sulphates :—				
(a.) Aluminium sulphate	35,366	2,259,808	37,693	2,272,645
(b.) Alum	4,069	364,344	3,340	298,367
3. Magnesium chloride	19,819	291,022	21,369	325,155
4. Magnesium sulphate	30,295	490,669	39,540	593,757
5. Potassium chloride	191,347	25,540,882	207,506	27,204,841
6. Salt (sodium chloride)	565,683	12,465,520	571,104	12,075,361
Total value in marks	—	47,313,809	—	49,429,346
" " £ sterling	—	£2,365,690	—	£2,471,467

* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1899, Berlin, IV. Heft.

† " " " " " " " " 1900 " "

GERMAN EMPIRE—continued.

TABLE 418.
Iron Ore.

State.	1898.*		1899.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Alsace-Lorraine	5,955,776	14,434,446	6,972,758	18,684,154
Bavaria	175,023	755,737	184,020	807,492
Brunswick	117,347	235,010	139,000	290,973
Hesse	159,430	1,224,593	160,766	1,277,455
Prussia	4,020,810	32,540,260	4,295,575	35,111,228
Saxe-Meiningen	40,322	154,273	123,989	498,548
Waldeck... ..	31,488	127,906	31,200	126,175
Other German States	52,116	205,303	67,963	371,990
Total value in marks... ..	10,552,312 {	49,677,528	11,975,271 {	57,168,015
" " £ sterling		£2,483,876		£2,858,401
Grand Duchy of Luxemburg	5,348,951 {	11,147,349	6,014,394 {	12,989,818
		£557,367		£649,491

TABLE 419.
Silver and Gold Ores.

	1898.*		1899.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Saxony	14,659	1,871,111	13,498	1,796,708
Other German States	43	11,464	8	122,189
Total value in marks... ..	14,702 {	1,882,575	13,506 {	1,918,897
" " £ sterling		£94,129		£95,945

According to a return§ of the mining branch of the great industrial insurance scheme of the German Empire, which numbers more than half a million members, the deaths from accidents among persons employed in and about mines and smelting works have been as follows :—

TABLE 420.
DEATHS FROM ACCIDENTS AT MINES AND OTHER MINERAL WORKINGS IN GERMANY.

Year.	Deaths.	Death-rate per 1,000 Persons Insured.||	Year.	Deaths.	Death-rate per 1,000 Persons Insured.||
1886	864	2·51	1893	956	2·27
1887	816	2·35	1894	814	1·91
1888	791	2·21	1895	932	2·16
1889	866	2·31	1896	987	2·21
1890	871	2·19	1897	961	2·05
1891	1,026	2·44	1898	1,254	2·53
1892	869	2·05	1899	1,060	2·03

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1899, Berlin, IV. Heft.

† 2,605 kilos. of fine gold and 467,593 kilos. of fine silver were extracted at the Metallurgical Works in 1899.

§ *Vierzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1899*, Berlin.

|| The number of deaths is liable to slight alterations every year in consequence of persons dying after a time from injuries originally classed as non-fatal.

GERMAN EMPIRE—continued.

TABLE 421.

DEATHS FROM ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1899.*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines	48,408	90	—	90	1·86
Coal mines	370,813	841	3	844	2·28
Ore mines and smelting works... ..	77,830	100	1	101	1·30
Salt mines and brine works	17,232	18	—	18	1·04
Other mineral workings... ..	7,069	7	—	7	0·99
Total	521,352	1,056	4	1,060	2·03

Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

BAVARIA.†

TABLE 422.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1898 and 1899.

Kind of Mines or Mineral Workings.	1898.		1899.		Kind of Mines or Mineral Workings.	1898.		1899.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Barytes	87	152	122	353	Ochre, &c.	92	247	95	131
Basalt	737	1,937	758	1,820	Paving stones	278	905	313	926
Brown coal	243	604	158	266	Petroleum... ..	14	6	18	10
Cement marl	232	12	391	336	Porcelain earth	186	520	115	361
Coal	6,080	11,367	6,265	12,637	Salt, rock	106	144	96	140
Copper ore	14	30	27	36	„ from brine	279	614	215	631
Fluorspar	9	16	8	28	Sand	50†	156†	35	111
Gold	30	78	14	47	Sandstone†	1,049	3,029	1,234	3,617
Iron ore	507	1,372	561	1,638	Slate (roofing and slabs).	136	310	127	277
Iron pyrites	29	97	28	114	Steatite	66	21	74	228
Lead	2,948	4,409	3,090	7,525	Whetstone	24	—	10	—
Limestone	216	320	1,176	268					
Manganese ore	15	4	28	3					
	738	1,789	722	1,901					
	40	96	42	110					
	591	1,474	595	1,476					
	1	—	1	—					
					Total	14,797	29,966	16,318	34,990

* Vierzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1899, Berlin.

† Return furnished by the Royal Bavarian Mining Department, Munich.

‡ Not including those employed in Zweibrücken.

GERMAN EMPIRE.—BAVARIA—continued.

TABLE 423.

QUANTITY and VALUE of MINERALS obtained during the Years 1898 and 1899.

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ...	4,339	25,859	6,215	34,570
Basalt ...	261,247	525,338	317,761	613,138
Brown coal ...	38,663	131,369	35,736	132,912
Cement marl ...	110,757	209,496	220,716	319,667
Coal ...	964,611	9,797,056	1,004,421	10,593,105
Emery ...	280	8,625	400	16,720
Feldspar ...	1,949	32,212	287	4,340
Fireclay ...	282,994	2,685,860	271,792	2,020,133
Fluorspar ...	4,440	20,840	3,631	23,463
Granite ...	156,938	1,855,202	181,876	1,992,019
Graphite ...	4,593	391,664	5,196	481,170
Gypsum ...	25,688	52,666	29,727	82,607
Iron ore ...	171,987	712,520	181,981	777,392
„ pyrites ...	2,304	29,142	2,516	30,755
Limestone ...	214,309	315,590	267,180	375,566
Lithographic stone ...	12,030	721,740	11,962	956,960
Melaphyre ...	259,986	779,958	308,836	926,508
Ochre, &c. ...	8,748	126,947	9,287	133,406
Paving stones ...	16,720	327,568	20,195	383,610
Petroleum ...	12	1,200	68	6,120
Porcelain earth ...	29,197	141,705	25,822	94,292
Salt, rock ...	736	16,143	802	26,440
„ from brine ...	39,717	1,878,515	41,207	1,690,566
Sand ...	45,907	69,775	39,922	67,999
Sandstone ...	296,139	1,674,320	315,786	1,671,669
Slates (roofing and slabs) ...	3,956	96,157	2,067	91,661
Steatite ...	1,912	116,773	2,197	135,440
Whetstone ...	85	6,700	81	4,800
Total value in Marks ...	{ 22,750,940 }		{ 23,687,028 }	
„ „ £ sterling ...	{ £1,137,547 }		{ £1,184,351 }	

PRUSSIA.

The Prussian statistics appear in a slightly different form this year, owing to the separation of open workings for coal, brown coal, ores, and certain other minerals. It is principally in the case of brown coal workings that this distinction is important.

TABLE 424.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1898 and 1899.*

Kind of Mines or other Mineral Workings.	1899.				Total for preceding year.
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ...	14,312	8,730	13,975	37,017	35,135
Coal ...	265,198	5	79,165	344,368	324,351
Ore ...	44,004	1,792	21,662	67,458	65,491
Other mineral workings ...	7,194	1,848	7,200	16,242	15,335
Total ...	330,708	12,375	122,002	465,085	440,312

* Zeitschr. B. H. S. W., Vol. XLVIII., p. 45.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 426.

QUANTITY and VALUE of SALTS obtained from BRINE WELLS, &c. during the Years 1898 and 1899.

Description of the Product.	1898.*					1899.†				
	Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.		Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.	
	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.
1. Alkaline Sulphates:—			Metric Tons.	Metric Tons.	Marks.			Metric Tons.	Metric Tons.	Marks.
(a) Potassium sulphate ..	1	6	47,001	13,377	2,309,882	1	8	41,787	19,038	3,089,910
(b) Potassium and magnesium sulphate.	—	4	‡	11,228	828,760	—	6	‡	8,169	665,365
(c) Sodium sulphate ..	7	8	35,895	43,928	1,118,320	8	8	38,955	55,253	1,371,701
2. Earthy Sulphates:—										
(a) Aluminium sulphate..	6	1	9,373	11,347	699,676	5	1	9,923	11,731	705,593
(b) Alum	2	1	836	932	86,597	2	1	819	664	63,316
3. Magnesium chloride ..	—	2	18	6,432	98,870	—	2	18	6,634	101,399
4. Magnesium sulphate ..	—	8	35	19,967	336,739	—	6	35	26,468	404,261
5. Potassium chloride ..	11	3	602,346	107,760	14,173,740	10	3	819,075	119,123	15,157,577
6. Salt (sodium chloride) ..	36	5	95,537	286,051	6,560,855	35	5	92,683	288,588	6,580,730
Total	63	38	791,041	591,022	28,113,439 £1,305,672	61	40	1,003,295	535,654	28,133,752 £1,406,968

TABLE 427.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1899 and preceding Year.§

Kind of Mines or other Mineral Workings.	1899.				Total for preceding year.
	Number of Deaths.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal	38	15	19	72	70
Coal	705	—	92	797	929
Ore	81	—	13	94	65
Other mineral workings	9	3	8	20	30
Total	833	18	132	983	1,094

* *Zeitschr. B. H. S. W.*, Vol. XLVII., p. 21.† *Zeitschr. B. H. S. W.*, Vol. XLVIII., p. 21.

‡ Included with 1 (a) and 5.

§ *Zeitschr. B. H. S. W.*, Vol. XLVIII., p. 45.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 426.

QUANTITY and VALUE of SALTS obtained from BRINE WELLS, &c. during the Years 1898 and 1899.

Description of the Product.	1898.*					1899.†				
	Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.		Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.	
	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.
1. Alkaline Sulphates:—			Metric Tons.	Metric Tons.	Marks.			Metric Tons.	Metric Tons.	Marks.
(a) Potassium sulphate ..	1	8	47,001	13,377	2,208,882	1	8	41,787	19,028	3,088,910
(b) Potassium and magnesium sulphate.	—	4	‡	11,228	828,760	—	6	‡	8,169	665,385
(c) Sodium sulphate ..	7	8	35,895	43,828	1,118,320	8	8	38,955	55,253	1,371,701
2. Earthy Sulphates:—										
(a) Aluminium sulphate..	6	1	9,373	11,347	699,676	5	1	9,923	11,731	705,598
(b) Alum	2	1	836	932	86,597	2	1	819	664	63,316
3. Magnesium chloride ..	—	2	18	6,432	98,870	—	2	18	6,634	101,399
4. Magnesium sulphate ..	—	8	35	19,967	336,739	—	6	35	26,466	404,381
5. Potassium chloride ..	11	3	602,346	107,760	14,173,740	10	3	819,075	119,123	15,157,577
6. Salt (sodium chloride) ..	36	5	95,537	286,051	6,580,855	35	5	92,683	288,588	6,580,730
Total	63	38	791,641	591,022	26,113,439 £1,305,672	61	40	1,003,295	535,654	26,138,752 £1,406,988

TABLE 427.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1899 and preceding Year.§

Kind of Mines or other Mineral Workings.	1899.				Total for preceding year.
	Number of Deaths.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal	38	15	19	72	70
Coal	705	—	92	797	929
Ore	81	—	13	94	65
Other mineral workings	9	3	8	20	30
Total	833	18	132	983	1,094

* Zeitschr. B. H. S. W., Vol. XLVII., p. 21.

† Zeitschr. B. H. S. W., Vol. XLVIII., p. 21.

‡ Included with 1 (a) and 5.

§ Zeitschr. B. H. S. W., Vol. XLVIII., p. 45.

GERMAN EMPIRE.—PRUSSIA—*continued.*

The two worst accidents* in the year were :—

(a.) The suffocation of 11 men by gases given off from an underground fire which broke out in some unexplained manner in Ludwigs-Glück Colliery, in the Zabrze District, on the 19th November, 1899.

(b.) An explosion of fire-damp at Reden Colliery, near Saarbrücken, ignited by an underground fire at Reden Colliery, which caused nine deaths.

No other accident caused the loss of more than four lives.

The Prussian Government now publishes a special account† of accidents from electricity at mines. There were three separate accidents causing three deaths during the year 1899, and a fourth happened on the 4th January this year.

TABLE 430.

EXPLOSIONS OF FIRE-DAMP OR COAL DUST classified according to CAUSE.‡

Cause.		1898.			1899.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.
I. Lighting	1. Naked lights ...	2	6	8	1	5	6
	2. Matches or smoking	—	1	1	2	3	5
	3. Illegally opened ...	3	—	3	—	1	1
	4. In defective condition or injured during work.	1	6	7	1	8	9
	5. Gauze becoming red hot.	—	—	—	—	2	2
	6. Oil or soot on gauze taking fire	—	—	—	—	—	—
	7. Flame driven through gauze by ventilating current.	—	2	2	2	1	3
	8. Flame driven through gauze by improper handling.	5	13	18	3	9	12
	9. Passage of flame when relighting by amorces	—	—	—	—	—	—
II. Shot firing ...	10.	1	11	12	2	5	7
III. Underground fires.	11. Ventilating furnaces	—	—	—	—	—	—
	12. Accidental or spontaneous ignition of mineral, timber, or other material.	—	—	—	1	1	2
IV. Miscellaneous	13. Sparks from tools (?)	—	—	—	—	—	—
	14. Sundries or unknown	—	2	2	—	1	1
Total		12§	41	53	12||	36	48

* *Zeitschr. B. H. S. W.*, Vol. XLVIII., pp. 54 and 63.

† "Unglücksfälle in elektrischen Betrieben der Bergwerke Preussens," *Ibid.*, p. 459.

‡ *Ibid.*, p. 72.

§ Causing 145 deaths, *Ibid.*, Vol. XLVII., p. 64.

|| " 25 " *Ibid.*, Vol. XLVII., p. 68.

GERMAN EMPIRE.—SAXONY—*continued*.

TABLE 433.

DEATHS and DEATH-RATES from ACCIDENTS at MINES during the Years 1898 and 1899.

Kind of Mines.	Deaths from Accidents.		Death-rate* per 1,000 Persons Employed.	
	1898.	1899.	1898.	1899.
Brown coal	12	10	4.97	3.93
Coal	28	27	1.24	1.18
Ore	3	4	.66	.96
Total and average	43	41	1.45	1.38

GRAND DUCHY OF LUXEMBURG.

A table prepared by the Mining Branch of the Home Department of the Grand Duchy of Luxemburg, and shown at the Paris Exhibition, explains the great development of the country's resources during the last 32 years. The figures below are extracted from this table :—

TABLE 434.

Year.	Number of workings.	Number of workmen.	Output in metric tons.	Value in francs.	Value per metric ton.	Output per workman.	
						Metric tons.	Value.
1868	—	1,713	691,681	1,633,250	France. 2.36	404	France. 953
1870	—	2,113	889,236	2,882,035	3.24	421	1,364
1880	—	3,656	2,173,463	6,538,544	3.01	594	1,789
1890	58	4,185	3,359,413	8,208,311	2.44	803	1,959
1899	72	6,074	5,995,408	17,031,507	2.84	987	2,803

Greece.

The principal mineral productions of Greece are the ores of iron, lead, manganese, and zinc, and they are chiefly obtained from the Laurium district in Southern Attica.

Salt is obtained from sea water at Anavyssos, near Laurium, and in the Island of Leucados. The salt industry is a Government monopoly.

Nearly every island of the Greek Archipelago † contains valuable mineral deposits, and more particularly the ores of iron and manganese.

Milo yields gypsum, kaolin, manganese ore, millstones, salt, and sulphur. Seriphos exports iron ore in increasing quantities, and so does its neighbour Thermia. Naxos has long been famous for its excellent emery, and modern appliances are being introduced to quarry it. Zea has deposits of the ores of iron, lead, and manganese. Kimolos abounds in minerals; lead was worked by the ancients in Polinos; Polycandros will soon be producing iron ore. Santorin yields lava from which paving stones are manufactured and puzzolana.

* In calculating the death-rate the persons employed in commercial work above ground numbering about 330 yearlings are excluded.

† Consul Cottrell, "Trade of the Cyclades for the Year 1899." *Dipl. and Cons. Reports*, No. 2,411, Ann. Ser., 1900 [Cd. 1-48], pp. 6-12.

Greenland. (See DENMARK.)

Guatemala.*

The following minerals are found in different parts of the Republic, viz., the ores of antimony, copper, gold, iron, lead, manganese, silver and zinc, besides coal, lignite, graphite, gypsum, marble, mica, salt, sulphur, talc, and turquoises.

Though mines were a source of great revenue to Church and State between 1627 and 1820, when Guatemala was a colony of Spain, the mineral industries at the present day are unimportant.

With the object of encouraging mining a new law has lately been passed ; it exempts the mine owner from import duties upon machinery and materials and from export duties upon the mineral products, and it also sets the miner free from military service.

Hayti.†

Coal, copper, quicksilver, and other minerals are said to exist, but at present the deposits have not been developed.

Herzegovina. (See AUSTRIA-HUNGARY.)

Holland.‡

Holland possesses immense peat bogs,§ which produce about 100 million hectolitres of good fuel annually. Since 1893 the turbaries have been further utilized for making peat litter. There are now nine factories producing it ; they employ 2,500 persons, and their total output is more than 220,000 tons of peat litter a year.

There are coal mines at Heerlen and Kerkrade|| ; and underground stone quarries are worked at Maastricht and Velkenburg.

TABLE 438.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1898 ...	409	—	409	238	2	240	649
1899 ...	610	—	610	280	2	282	892

* Consul Trayner, "Trade, Agriculture and Finance of Guatemala for the Year 1899." *Dipl. and Cons. Reports* No. 2,488, Ann. Ser., 1900, [Cd. 1-125] pp. 27-32.

† Acting Consul-General Siordet, "Trade of the Republic of Hayti for the Year 1898." *Dipl. and Cons. Reports* No. 2,358, Ann. Ser. 1899 [C. 9496-29], p. 6.

‡ Official Returns furnished by the Government of the Netherlands.

§ Rommenholler, *Mouvement du Commerce et de l'industrie des Pays-Bas durant l'exercice 1898*. Rotterdam, 1899, p. 122.

|| Büttgenbach, "Die Geologie des alten Herzogthums Limburg." *B.u.h. Zeitung*, Vol. LVII, 1898, p. 363.

HOLLAND—continued.

TABLE 439.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years 1898 and 1899.

Year.	Under-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1898 ...	40	—	40	80	—	80	120
1899 ...	40	—	40	70	—	70	110

TABLE 440.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
		Florins.		Florins.
Building stone ... Cubic Metres	2,000	4,000	2,000	4,000
Coal ... Metric Tons	150,398	405,322	212,973	666,818
Total value in Florins ...	—	409,322	—	670,818
" " £ sterling ...	—	£34,110	—	£55,901

TABLE 441.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.

Year.	Under-ground.			Above-ground.			Total Number of Deaths Under and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Under and Above Ground.
1898	—	—	—	—	—	—	—	—	—
1899	2	—	2	—	—	—	2	3.28	2.24

There were no fatal accidents at the underground stone quarries in 1899.

Honduras.*

The precious metals, gold and silver, are worked on a small scale. The exports of minerals during the year ending 30th June, 1899, were as follows :—

TABLE 442.

	Mineral.	Value.
		£
Gold		2,359
Ore		3,852
Salt		212
Silver		61,272

Indo-China.**ANNAM.**

Annam and Tong-King possess large deposits of coal, iron ore, and argentiferous lead ore ; besides having also asbestos, graphite, kaolin, and marble, and the ores of antimony, copper, gold, manganese, nickel, quicksilver, and tin.†

The “Société des houillères de Tourane” obtained 3,911 tons of coal in 1897 from their collieries, which are situated at Nong-son.‡ The quantity exported in 1898 was 2,300 tons, valued at 31,800 francs.§

Iron ore|| is being smelted on a very small scale by the natives at Nho-Lam in the province of Quang-nam.

COCHIN CHINA.¶

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895 ; but the mines do not appear to have been worked since, as no quantity is reported in the French statistics.

TONG-KING. (See also ANNAM.)**

The “Société Française des Charbonnages de Hongay” has large open workings for coal in Haton, and a mine 140 m. deep in Nagotma. It exports 15,000 tons of coal a month.

* Consul Campbell, “Trade of Honduras for the year 1899.” *Dipl. and Cons. Reports*, No. 2463, Ann. Ser., 1900 [Cd. 1-100], p. 8.

† *B.u.h. Zeitung*, Vol. LVIII., 1899, p. 292.

‡ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1897*, p. 79.

§ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1898*, p. 86.

|| Consul Tremleff, “Trade of Saigon and District for the Year 1897.” *Dipl. and Cons. Reports*, No. 2,060, Ann. Ser., 1898 [C. 8648-82].

¶ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1896*, p. 76.

** *B.u.h. Zeitung*, Vol. LVIII., 1899, p. 292.

ITALY—continued

Granite.—Piedmont boasts of excellent red granite and white granite, and the quarries at Baveno and Mont'Orfano on the Lago Maggiore are worked upon an extensive scale.

Iron.—The thick deposits of iron ore in the Island of Elba have been worked for many centuries, and are not yet exhausted. The ore is obtained in open quarries, is loaded at once into barges, and then transhipped into large steamers, which convey it to England, France, Germany, and even America. But a total output of only 250,000 tons is small compared with that of other iron-producing countries.

Lead and Zinc.—Sardinia is remarkable for its deposits of the ores of lead and zinc. Malfidano, in the province of Cagliari, is the most important zinc mine in the island. It employs 2,000 workmen, and produces annually on an average 51,500 tons of zinc ore, worth nearly £150,000.

Marble.—The well-known Carrara marble is obtained from beds of crystalline limestone of Triassic age, which in places attain the enormous thickness of more than 3,000 feet (1,000 m.). In addition to the finest white statuary marble, the quarries furnish many coloured varieties, each known in commerce by its special name.

The importance of the industry may be gauged by the fact that the quarries and dressing establishments of the Apuan Alps gave work to 10,155 persons in 1898, or about the same number as are employed in all the open slate quarries of North Wales.

The total output of worked and unworked marble from the Carrara district in 1898 was 245,213 tons, of which two-thirds were exported, England and the United States being the most important customers.*

Quicksilver.—Cinnabar is obtained at Monte Amiata in Tuscany.

Salt.—The deposits of rock salt worked in Sicily belong to the Upper Miocene period, and lie geologically above the sulphur-bearing rocks. The Sicilian mines produce from 12,000 to 15,000 tons a year, but this output might be very largely increased. Salt is obtained from sea water by solar evaporation and especially in Sicily. The works at Trapani produce about 200,000 tons yearly.†

Sulphur.—The sulphur of Sicily is found in seams and lenticular masses in rocks of Upper Miocene age, and mainly in the provinces of Caltanissetta and Girgenti. At the end of 1898 there were 727 mines at work, employing 28,984 workmen underground, and the output of sulphur-bearing rock was 3,163,146 tons. Most of the mines are small and shallow; the deepest workings are only 270 yards (250 m.) from the surface, whilst the average depth is from 100 to 200 yards.

At the present time 46 per cent. of the crude rock is treated for the extraction of its sulphur in the old-fashioned kilns (*calcaroni*), 40 per cent. in kilns with communicating chambers, and 13 per cent. in steam apparatuses. The remainder was collected directly in the liquid state from mines on fire. The total amount of sulphur obtained in 1898 was 482,152 tons.

Volcanic Lava and Ash.—Basaltic lava is quarried on a large scale at the foot of Vesuvius, and so is volcanic ash known as "pozzolana." Similar products are obtained near Rome.

The official catalogue‡ contains an account of the constitution of the Royal Corps of Mining Engineers, whose functions are far more extensive than those of the British Inspectors of Mines.

* Consul Keene "Trade of Genoa and District for the year 1899," *Dipl. and Cons. Reports*, No. 2,438, Ann. Ser., 1900 [Cd. 1-75], pp. 28 and 29.

† Vice Consul Marino "The Trade of Sicily for the year 1899." *Dipl. and Cons. Reports*, No. 2,529, Ann. Ser., 1900 [Cd. 352-25], p. 43.

‡ *Op. cit.*, p. 233.

ITALY—continued.

TABLE 445.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1898 and 1899.*

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum-stone	7,000	35,000	5,800	29,000
Antimony ore	1,931	219,112	3,791	224,311
Asphalt, &c.	93,750	1,328,224	81,987	1,152,946
Boric acid	2,650	848,000	2,674	855,680
Copper ore	95,128	2,131,497	94,764	3,438,861
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	341,327	2,429,825	388,534	2,759,219
Gas, carburetted hydrogen (cubic metres).	464,931	18,466	753,185	29,165
Gold ore... ..	9,549	644,134	11,859	457,080
Graphite	6,435	87,115	9,990	279,720
Iron ore	190,110	2,746,239	236,549	3,534,117
„ „ manganiferous	11,150	133,800	29,874	385,744
Iron pyrites	67,191	828,051	76,538	994,293
Lead ore	(a) 34,180	5,231,240	(b) 34,294	5,675,660
Manganese ore	3,002	93,535	4,356	112,160
Mineral waters	28,340	358,960	27,114	359,644
Nickel and cobalt ore	—	—	3	900
Peat	18,327	246,064	30,228	422,985
Petroleum	2,015	589,129	2,242	594,062
Quicksilver	19,201	661,113	29,322	957,722
Rock salt	18,199	305,735	17,821	302,338
Salt from springs	11,546	297,839	11,021	319,751
Salt, sea	451,426	3,552,507	363,826	2,570,368
Silver ore	435	380,238	540	582,262
Sulphur, rock	3,362,841	40,375,152	3,763,206	44,114,503
Zinc ore	132,099	12,061,667	150,629	24,233,330
Produce from quarries (value) ...	—	31,224,142	—	35,300,341
Total value in lire	—	106,826,784	—	129,686,162
„ „ £ sterling	—	£4,273,071	—	£5,187,446

TABLE 446.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1898 and 1899.†

Cause	1898.					1899.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.
Falls of ground ...	123	51	99	·88	·48	122	69	82	1·07	·75
Suffocation by gases, explosions, and fires.	18	12	27	·21	·11	14	16	44	·25	·18
Falling down shafts, &c., and miscellaneous.	47	15	37	·26	·14	55	19	42	·29	·21
Blasting	10	4	8	·07	·04	9	3	7	·05	·03
Total	198	82	171	1·42	·77	200	107	175	1·66	1·17

* *Rivista del Servizio Minerario nel 1898*, pp. xxvi., xxxiii., and xlv., *nel 1899*, pp. xxv., xxxiii., and l.
† Ditto, 1898, pp. lxi. and lxii., *nel 1899*, pp. cvii. and cviii.

(a) Including 250 tons of lead and zinc ore, of the value of 10,000 lire.

(b) Including 3,248 tons of lead and zinc ore, of the value of 64,854 lire.

JAPAN—continued.

TABLE 448.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1897 and 1898.*

Kind of Workings.	Persons Employed in the Year.	
	1897.	1898.
Coal Mines	82,529	75,831
Metal Mines	71,988	51,706
Other Mineral Workings ...	6,022	5,194
Total	160,539	132,731

TABLE 449.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1897 and 1898.*

Mineral or Metal.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
Antimony, crude } (metal)...	Metric Tons. 936	£ 15,281	Metric Tons. 1,006	£ 16,595
" refined }	947	17,501	233	6,199
Arsenic (metal)	13	151	7	89
Coal	5,647,751	2,066,088	6,761,301	2,597,030
Copper (metal)	20,770	794,973	21,080	920,275
Gold "	Kilos. 1,018	117,727	Kilos. 1,161	138,271
Graphite	204	3,215	347	2,053
Iron, pig	57,678	85,942	23,652	84,319
" pyrites	5,698	2,407	8,741	2,817
" speiss	Not reported.	—	Not reported.	—
" vitriol	40	54	"	—
Lead (metal)	1,737	18,839	1,705	20,259
Manganese	17,351	9,814	11,517	7,656
Petroleum, refined	Litres 4,719,903	14,079	Litres 50,643,246	38,718
" crude	" 39,208,411	32,776	"	—
Quicksilver	3	446	1	239
Salt	944,039	1,035,325	Not reported.	—
Silver (metal)	Kilos. 57,208	200,987	Kilos. 60,548	222,567
Sulphur	12,013	29,588	10,339	39,771
Tin (metal)	1,737	18,838	43	2,117
Total value	—	4,463,981	—	4,098,975

TABLE 450.

ACCIDENTS at MINES during the Years 1896-8.*

Year.	Killed.	Injured.	Death-rate per 1,000 Persons Employed.
1896	44	45	0.37
1897	15	28	0.09
1898	67	(Not stated.)	0.53

* Statistical Abstract of the Mineral Industry, published by the Mining Bureau of the Department of Agriculture and Commerce, Tokio, 1899.

Java. (See DUTCH EAST INDIES.)**Johore.***

Gold has been found in one or two places, and the country is rich in iron ore. Important deposits of tin have been discovered in several places, and a considerable amount of tin mining is now carried on in the Ulu Johore districts, and some at Bukit Mor, Padang.

Lourenço Marques. (See PORTUGUESE EAST AFRICA.)**Luxemburg.**

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

Madagascar.†

The mineral wealth of the island appears to be great. In addition to gold, which is found in alluvial deposits widely spread over the island, the ores of antimony, copper, iron and tin are said to be abundant, to say nothing of asphalt, coal, and petroleum.

According to Consul Porter, rich deposits of alluvial gold have been discovered in the valley of the Amboasary, a tributary of the Mananjary river, about 40 miles east of the town of Ambositra. The auriferous gravel is being washed in pans by the natives, of whom about 3,000 are at work. The present output is 7,234 ozs. (225 kilograms.) per month. The district is unhealthy owing to the prevalence of fever.

The value of the total output of gold from Madagascar for 1899 is reckoned at £400,203, against only £9,600 for the previous year.

Mexico.‡

Many minerals are obtained in Mexico. The most important are the ores of copper, gold, lead, and silver.

Coal.—Various coalfields have been discovered, and no doubt will gradually become of immense importance to the welfare of the Republic.

Copper.—The most important copper mine in Mexico is at Boleo,§ Lower California. It employed 2,864 persons in 1899, and produced 10,509 tons of metal.

Gold.—The precious metal is found in many of the provinces, but especially in Sonora, Sinaloa, Guerrero and Oaxaca.

Iron.—The wealth of Mexico in iron ore must not be gauged by last year's output. Rich deposits exist, but at present the ore is smelted on a small scale and only by charcoal furnaces.

*—*The Singapore and Straits Directory for 1900.* Singapore, 1900, p. 301.

† MS. communication to Foreign Office, 5 July, 1900, and Consul Porter, "Trade of Madagascar for the Year 1899." *Dipl. and Cons. Reports*, No. 2513, Ann. Ser., 1900 [Cd. 352-9], p. 5.

‡ Romero, *Geographical and Statistical Notes on Mexico.* New York and London, 1898, pp. 13-27.

§ *Exposition Universelle de 1900. Compagnie du Boleo. Notice sur la période de 1889 à 1900.* Paris, 1900.

MEXICO—continued.

Marble.—The so-called “Mexican onyx” is a handsome marble, obtainable in large blocks, and much prized for decorative purposes.

Silver.—Mexico produces nearly 30 per cent. of the world's output of silver. The principal mining districts are in the States of Guanajuato, Zacatecos, San Luis Potosi, and Hidalgo.

TABLE 451.

PERSONS EMPLOYED at MINES during the Year 1897.*

	Men.	Women.	Boys.	Total.
	98,466	356	30	98,852

TABLE 452.

VALUE of MINERALS exported during the Fiscal Year 1898-1899 and the Calendar Year 1899.

Mineral.	1898-9.*		1899.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	\$	Metric Tons.	\$
Antimony ore	6,359	101,318	10,382	115,292
Asphalt	42	1,382	56	1,623
Coal	126,251	507,902	113,191	453,303
Copper and Copper ore	22,019	5,601,134	25,506	7,966,655
Gold	Kilos. 13,092	8,843,081	Kilos. 11,724	7,919,330
Graphite... ..	1,857	18,237	2,305	22,847
Gypsum	450	2,250	1,050	5,250
Iron ore	21	208	—	—
Lead	65,004	3,786,144	67,442	3,885,922
Marble	294	30,415	369	33,820
Precious stones... ..	—	—	—	801
Pumice stone	—	10	22	1,510
Salt	1,862	8,605	1,820	9,770
Silver	Kilos. 1,623,647	66,431,541	Kilos. 1,567,500	57,614,631
Tin	—	4	Kilos. 4	4
Zinc ore	84	840	—	—
Minerals not specified... ..	—	—	—	18,717
Total value in \$	—	85,333,071	—	78,049,475
„ „ £	—	£8,533,307‡	—	£7,804,947‡

TABLE 453.

DEATHS from ACCIDENTS at MINES during the Years 1896 and 1897.*

Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
1896	175	1.77
1897	136	1.37

* Official Return furnished by the Ministry of Finance, Mexico.

† *Boletín de Estadística Fiscal.* Numeros 193 and 201, Mexico, 1900.

‡ Calculated at one dollar=2s. 0d.

NEW CALEDONIA—*continued.*

TABLE 455.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.*

Mineral.	Percentage of Metal.	1898.		1899.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Francs.		
Chrome ore	51 (Cr ₂ O ₃)	14,300	715,000		
Cobalt ore	3 to 5	21,000	2,100,000		
Copper ore	10	5,300	Not stated.		
Gold ore	—	—	—		
Lead ore (argentiferous) ...	—	—	—		
Nickel ore	7.5	53,200	2,394,000		
Total value in francs ...	}	}	5,209,000		
„ „ £ sterling			£208,360		

Nicaragua.†

The exact output of the mines and alluvial diggings does not appear to be known. The exports are given in the table below.

TABLE 456.

Mineral.	1898.		1899.	
Gold (bars and dust) ...	{ Kilos. 505 } { Ozs. 16,242 }	£ 53,726		
Gold ore	Lbs. 8,791	60,000		

Norway.‡

Norway is far less important as a mining country than Sweden.

Apatite.—This mineral was worked on a large scale some years ago at Oedegaarden, but the output is now comparatively small.

Copper.—Copper ore and iron pyrites are the chief metallic products of Norway. They are produced by mines at Røros, Sulitjelma and Lyngen. The Røros mines produce annually about 800 tons of copper and exports 20,000 tons of iron pyrites.

Felspar.—The supply of felspar is derived mainly from veins of pegmatite in the province of Smaalenene and along the coast between Bamle and Arendal. Quartz and mica are obtained from the same deposits.

Granite.—Quarries producing granite, syenite, gabbro or porphyry, are worked near Fredrikshald, Frederikstad, Larvik and Drammen.

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1898*, p. 86. Figures for 1899 not yet available.

† Consul Charrière, "Trade of Nicaragua for the Year 1898," *Dipl. and Cons. Reports*, No. 2,329 Ann. Ser., 1899 [C. 9,496]. "Erz-Vorkommnisse im Freistaate Nicaragua," *Zeitschr. B.H.S.W.* Vol. XLVIII. B. 1900, p. 7. Figures for 1899 not yet available.

‡ Information furnished by the Central Statistical Office, Kristiania, and *La Norvège. Ouvrage Officiel publié à l'occasion de l'Exposition Universelle de Paris, 1900.* Kristiania, 1900, p. 395.

NORWAY—continued.

Infusorial Earth.—Beds of infusorial earth are worked at different places in the South Norway.

Marble.—Fauske, in Nordland, is the chief marble centre. The quarries are worked on a large scale.

Silver.—The Kongsberg mines have long been famous for their native silver, which is sometimes met with in masses of considerable size; the picked stuff sent to the melting works contains 70 per cent. of the precious metal. The amount of silver obtained by smelting, and derived almost entirely from Kongsberg, was 4,802 kilos., valued at 345,000 kroner in 1898.

There appears to be no official information about accidents in mines in Norway, similar to that which is given by the sister country.

TABLE 457.

PERSONS EMPLOYED at MINES during the Years 1897 and 1898.*

Kind of Mines.	1897.	1898.
Apatite	?	?
Cobalt ore (dressed)	30	20
Copper ore	1,133	1,417
Felspar	?	?
Gold	191	113
Iron ore	150	116
Iron pyrites (in part cupreous) ...	519	423
Molybdenite	9	—
Silver and silver ore	225	220
Titanium ore (rutile)	9	6
Zinc ore	168	44
Total	2,434	2,359

TABLE 458.

QUANTITY and VALUE of MINERALS produced from MINES during the Years 1897 and 1898.*

Mineral.	1897.		1898.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Kr.	Metric Tons.	Kr.
Apatite (exported)	872	48,000	3,593	197,600
Cobalt ore (dressed)	24	10,000	21	8,000
Copper ore	27,606	1,144,100	37,047	1,575,800
Felspar (exported)	17,392	295,000	11,355	181,700
Gold (fine)	Kilos. 1,266	2,500	Kilos. 2,858	5,700
Iron ore	3,627	21,000	4,425	29,600
Iron pyrites (in part cupreous) ...	94,484	1,445,000	89,763	1,431,800
Molybdenite	2	3,000	—	—
Silver (fine)	Kilos. 5,372	480,000	Kilos. 4,802	345,000
Titanium ore (rutile)	32	20,000	35	22,000
Zinc ore	908	27,000	320	9,600
Total value in Kr.... ..	—	3,495,600	—	3,806,800
“ “ £ sterling... ..	—	£192,066	—	£209,626

* Official Return furnished by the Central Statistical Office, Kristiania.

Orange Free State.

Coal.—The Orange Free State possesses a large area of the South African coalfield, and its railways are already being supplied from its own collieries.

Diamonds.—Though not to be compared in yield with the great Kimberley workings, the Jagersfontein diamond mine takes the palm for the water of its gems. According to the last annual report* of the Jagersfontein Company, the average value of the diamonds found was 40s. 9d. per carat, whereas the amount realised at De Beers and Kimberley was only 29s. 7d. per carat.† The total yield of Jagersfontein mine for the financial year ended 31 March 1900, was 183,349 carats, worth £373,702. The war naturally interfered with mining operations; hence the smaller output.

Paraguay.

Though many useful ores and minerals are said to exist in Paraguay, they still remain unworked.

Persia.‡

The minerals of the country belong to the Government, and the mines are leased out to private persons. The Ministry of Mines has no account of the number of persons employed, nor of quantity and value of the minerals produced.

The mineral wealth of Persia is great, though it cannot be properly utilized at the present time owing to want of easy means of communication. Deposits of the following useful minerals are known to exist, viz.:—alum, antimony ore, borax, coal, the ores of cobalt, copper, gold, iron, lead and manganese, petroleum, realgar, salt, saltpetre, silver-lead ore, sulphur, and turquoises.

Coal.—There are fine coal deposits§ near Kerman, and much iron ore of good quality on the slopes of the Elburz range and elsewhere.

Copper.—Rich deposits of copper are known.

Lead ore.—Argentiferous lead-ore is plentiful, but is worked in a primitive fashion.

Turquoises.—The annual rent paid for the turquoise mines|| near Nishapur in Khorassan is £4,800, and the value of the gems produced must therefore considerably exceed that sum.

Peru.¶

No exact data exist concerning the number of persons employed in mines; but it is estimated at 100,000, including a few females.

The number of persons employed on the coast at the salt works, quarries, and petroleum wells is estimated at 5,000.

* *The New Jagersfontein Mining and Exploration Co., Ltd. Twelfth Annual Report and Accounts for the year ended 31st March 1900.* Kimberley, 1900.

† *De Beers Consolidated Mines. Eleventh Annual Report for the year ended 30th June 1899.*

‡ Helmhacker, "The Mineral Resources of Persia," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 38, and *B. u. h. Zeitung*, Vol. LVIII., 1899, p. 272.

§ *Berg-und hüt. Zeit.*, Vol. LVIII., 1899, p. 272.

|| Consul General Temple, "Report on the Trade and Commerce of Khorassan for the Year 1897-98," *Dipl. and Cons. Reports*, No. 2202, Ann. Ser., 1899 [C. 9044-28].

¶ Olacchea, *Apuntes sobre minería en el Perú*, Lima, 1898.

El Comercio, Lima, 4 Dec. 1899.

"Estudio sobre la region aurífera de Santo Domingo en la provincia de Carabaya," *Boletín de Minas, Industria y Construcciones*, Año XV., 1899, p. 57.

MS. communication from the "Escuela especial de Ingenieros," Lima, 1899.

PERU—continued.

The principal minerals of Peru are borate of lime, coal, copper ore, gold, petroleum, salt, and silver ore.

Borate of lime.—Deposits of this mineral exist in various parts of the country, and new discoveries are being made. The most important workings at the present moment are those of Arequipa and Tacna.

Coal.—Extensive beds of anthracite and semi-bituminous coal are known in Peru. The principal coal centres are Cerro de Pasco, Ancach and Hualgayoc. The first produces 7,000 tons annually and the two latter 3,000 tons, or 10,000 tons in all. Some of the Peruvian coal contains vanadium. Besides coal, Peru possesses lignite and peat.

Copper ore.—Rich veins of copper ore exist in the Cerro de Pasco silver mines. The output is now about 9,000 tons a year, containing 3,000 tons of metal. The other mines of the country are estimated to yield about 500 tons of metal.

Gold.—The amount of gold obtained from alluvial deposits and quartz veins is small. The lode of the Santo Domingo mine in the province of Carabaya yielded about 400 kilograms in the financial year 1898–9; but the means of communication are so difficult, that the mineral resources of this rich auriferous district cannot be properly utilized.

Petroleum.—Great expectations are entertained of the future of the petroleum industry, though the output of the wells at the present time is only 9,000 tons a year.

Silver ore.—This is the principal mineral worked in Peru; the largest mines are at Cerro de Pasco. The output of silver has diminished considerably, on account of the drop in price of the metal.

Salt.—The production of salt, a Government monopoly, is an industry of importance.

Sulphur.—Deposits of sulphur are found in many of the extinct volcanoes.

TABLE 459.

MINERALS produced during the YEARS 1898 and 1899.

Mineral.					1898.	1899.
					Metric Tons.	Metric Tons.
Antimony (Exported)	...	...	...	...	29	
Borates	...	...	...	...	—
Coal	...	...	...	...	10,000*	
Copper (Metal)	...	...	...	...	3,500*	5,248†
Gold (Fine)	...	...	...	...	Kilos. 1,000*	
Lead (Exported)	...	...	...	...	9	
Petroleum	{ Crude	...	...	...	9,000*	
	{ Refined	...	...	...
Salt	...	...	...	...	18,000*	
Silver (Fine)...	...	...	...	...	Kilos. 165,000*	
Tin (Exported)	...	...	...	...	2	

* Approximate output.

† From return compiled by Henry R. Merton & Co., London.

Philippine Islands.*

It has long been known that the mineral resources of these islands are very varied.

Coal.—Coal and lignite are found on many of the islands, and mining operations are likely to be carried on in the islands of Negros, Cebú, and Bataan.

Copper.—Copper ore occurs in the islands of Benguet, Lepanto, and Panay.

Gold.—Large quantities of gold have been extracted from alluvial deposits and quartz veins.

Iron.—Cebú and Caraballo have deposits of iron ore, which are likely to be worked.

Lead.—The ore of this metal is found in Marinduque, Luzon, and Panay.

Petroleum and Natural Gas.—Mineral oil is known in Cebú, Panay, and Leyte, and Cebú has likewise natural gas.

Quicksilver.—According to the reports of prospectors, there are deposits of quicksilver on Leyte and Panay.

Porto Rico.†

The island of Porto Rico possesses mineral resources which are not likely to remain undeveloped by its new owners.

Coal.—Coal has been found in the western part of the island and at Guatemala.

Copper.—The ores of copper are found in several places.

Gold.—From six to eight thousand dollars worth of gold a year is panned out from the beds of creeks and rivers.

Gypsum.—This mineral is common.

Iron Ore.—There are valuable deposits of iron ore, especially north of Juncos.

Lignite and Peat.—These two minerals occur in many places.

Phosphate of Lime.—Phosphate rock is everywhere abundant. It has been worked on the islet of Mona, in the San Domingo Channel, and about 9,000 tons were exported to Europe in 1894.

Salt.—Rich deposits of salt are known in several places.

Portugal.‡

The mineral products of Portugal, as shown by Table 462, are numerous, but the quantities raised at the present time are not sufficient to entitle it to be called a great mining country. The official statistics omit all mention of the marble, slate, and other stone quarried in the country.

Antimony Ore.—The principal antimony mines are in the commune of Gondomar, in the Porto district; the ore likewise occurs in the Braganza district.

Copper.—The deposit of copper-bearing pyrites at San Domingos, in Southern Portugal, furnishes most of the mineral wealth of the country at the present time. There are sundry other mines producing cupreous iron pyrites.

Marble.—Though Portugal cannot boast of treasures of white statuary marble like that of Carrara, it possesses many beautiful varieties of the stone.

Slate.—Portugal has slate quarries at Valongo which are worked by an English company. They produce large slabs for billiard tables, tanks, and cisterns.

Tin Ore and Wolfram.—These minerals occur in the Villa Real and Braganza districts.

* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242. Rice, "Mining in the Philippines," *Eng. Min. Jour.*, Vol. LXX., 1900, p. 400.

† Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.—"Zur Geologie der Insel Mona in West-Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII., 1899, p. 337.—Domenech "Porto Rico; her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529.

‡ Official Return furnished by the Portuguese Government.

PORTUGAL—continued.

TABLE 460.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
Coal	336	—	336	188	49	237	573
Iron ore	26	—	26	516	2	518	544
Other mines	1,345	—	1,345	2,062	181	2,243	3,588
Total for 1899	1,707	—	1,707	2,766	232	2,998	4,705
Total for previous year	1,476	—	1,476	2,059	309	2,368	3,844

TABLE 461.

PERSONS EMPLOYED at QUARRIES during the Year 1890.*

Under-ground.			Above-ground.			Total Under and Above Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
419	—	419	4,240	57	4,297	4,716

TABLE 462.

QUANTITY of MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore	245	6,237	59	1,966
Arsenic	751	41,448	1,083	56,811
Coal { Anthracite	10,250	34,289	11,930	42,961
Lignite	12,291	48,756	10,269	38,112
Copper ore	290	11,851	408	27,704
Copper precipitate	3,149	494,056	2,521	481,573
Cupreous iron pyrites	54,368	123,981	71,576	331,599
Gold	kilos. 6·8	4,340	kilos. 1·2	1,056
" quartz	—	—	13	65
Iron ore	2,519	3,023	15,078	23,670
" (manganiferous)	883	2,540	—	—
Iron pyrites	248,218	339,128	275,658	350,017
Lead ore	3,242	93,037	3,468	96,877
Manganese ore	907	2,402	2,949	19,893
Silver	kilos. 119·5	2,187	—	—
Tin ore	102	21,554	30	8,721
Wolfram... ..	59	15,476	55	12,512
Zinc	—	—	50	641
Total value in dollars	—	1,244,305	—	1,494,178
" " £ sterling	—	£191,432	—	£233,465

* No later return available.

PORTUGAL—*continued.*

TABLE 463.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Coal	1	—	1	—	—	—	1	1·74
Gold	—	—	—	—	—	—	—	—
Iron ore	2	—	2	—	—	—	2	3·68
Other mines ...	5	—	5	—	—	—	5	1·39
Total for 1899 ...	8	—	8	—	—	—	8	1·70
Total for pre- ceding year }	1	—	1	—	—	—	1	·26

There were seven deaths from accidents in quarries during the year 1890, giving a death-rate of 1·48 per 1,000 persons employed in that year.

Portuguese East Africa.

Coal, gems, and gold are said to have been discovered in the district of Lourenço Marques,* and on Inyack Island close to Delagoa Bay. Coal has also been found on the Catembe River, some 40 miles from Lourenço Marques, and much prospecting is going on.

Dr. Carl Peters has lately shown that gold exists and has been worked in Macombe's country, south of the Zambesi, and he gives many excellent reasons for supposing that this district is the Ophir of Scripture.†

PORTUGUESE NYASSALAND.‡

Portuguese Nyassaland possesses large deposits of coal and the ores of iron, gold, and silver. The ores of copper, nickel, and zinc have been discovered, besides graphite, marble, and slate.

Coal.—There are two known coalfields—one within a few miles of the natural harbour afforded by Pemba Bay, the other around Itule, on both sides of the Lugenda River.

Iron.—Magnetic ore occurs over a considerable area just west of the Pemba coalfield, and is smelted on a small scale by the natives.

Gold.—The principal known gold region is the district about the Rarico River, a tributary of the Lugenda.

* *Zeitschr. f. prakt. Geol.*, 1899, p. 267. Despatch from H.M. Minister at Lisbon to Foreign Office. Consul Ross, "Trade of Lourenço Marques and District for the year 1898." *Dipl. and Cons. Reports*, No. 2235, Annual Series, 1899 [C. 9044-61].

† *Jour. Soc. Arts*, vol. xlviii, 1900, p. 343.

‡ Worsfold, "Portuguese Nyassaland," London, 1899. *Handbook of the Nyassa Company*, London, 1898, p. 30

Prussia. (See GERMAN EMPIRE.)

Roumania.*

The minerals worked in Roumania are lignite, petroleum, rock salt, and stone.

Lignite.—Lignite is found in very many parts of the country, and the beds are sometimes as much as 20 feet thick; but lignite mining is at present in its infancy. The largest mines are at Margineanca, and are worked by the State; they produce 51,000 tons yearly. Great hopes are based upon the utilization of lignite by making it into briquettes with petroleum residues; the fuel so produced is of excellent quality and is cheaper than Welsh coal.

Petroleum.—Petroleum is, and probably always will be, the mainstay of the mining industry in Roumania. The oil-bearing regions are shown on maps in the reports of M. Rommenhöller† and Mr. Sutherland.‡ The illustrated pamphlet of the latter author affords an excellent account of the present state of the petroleum industry. The total output in 1899 was 300,000 metric tons, obtained partly from shallow hand-dug wells and partly from bore-holes. The Prahova district yields more petroleum than any other at the present time. The official statistics§ show that there are 68 productive bore-holes and 882 productive wells. The deepest bore-hole is only 550 metres deep, whilst the wells are often only 20 to 100 metres deep. According to M. Alimanestiano, who is Chief of the Mining Department, the most pressing need of the petroleum industry is the establishment of a pipe-line from the wells to the Danube, or even to Costantza. Given cheap transport, Roumania could supply central Europe with oil at lower prices than any of its competitors.

Salt.—Roumania is blessed with rich deposits of salt, which extend for a distance of about 100 miles along the Carpathians. One bed of pure rock salt is from 800 to 1,000 feet thick.|| The industry is a Government monopoly, and much of the work in the rock salt mines is carried on by convict labour. About 22,000 tons of rock salt are exported annually to Turkey and 3,000 to Russia. M. Alimanestiano is of opinion that the export trade might be extended with profit to Africa and even India.

Stone.—Roumania has hitherto been largely dependent upon the foreigner for stone and building materials generally, though ample supplies exist in the country itself, especially in the Dobrudja. However, the paving stones from Belgium and France have now been to some extent ousted by native products, in spite of the difficulties which beset the Roumanian quarry-owner in the shape of expensive transport and want of trained workmen. As these obstacles disappear, quarrying may be expected to become an important industry in the country.

There are already five important granite quarries in the Dobrudja, and the total number of quarries in the country is shown by the official statistics¶ to be very considerable. There are a few marble quarries.

For centuries the alluvia of many of the rivers have been known to carry gold, and a little of the precious metal is occasionally washed from the sands by the peasantry; but the gold resources of Roumania are as yet unknown. The same may be said of the ores of cobalt, copper, lead, manganese, mercury, iron, and silver, and of the beds of anthracite and coal, which have been found cropping out in various parts of the country.

* Alimanestiano, "L'Exploitation des Mines en Roumanie." *Courrier de Roumanie*, Nos. 4, 5, and 6; Bucharest, 1898-99; and "Der Bergbau Rumäniens," *Allgemeine bergmännische Zeitschrift*, No. 5, 1899, p. 16; and Crémér, *Richesse Minérale de la Roumanie*, 1900.

† Rommenhöller, *La Roumanie*, Rotterdam, 1898.

‡ "The Petroleum Industry of Roumania," reprinted from the *Petroleum Review*, April 1899.

§ *Statistica Industriei Miniere din tara (Afara de Cariere) de la 1 Iulie 1897—30 Iunie 1898*; Bucharest, 1899, p. 58; and Crémér, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation des Pétroles Roumains présentée au Jury de la Classe 63*.

¶ Crémér, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation du Gisement de sel gemme de la Roumanie présentée au Jury de la Classe 63*.

¶ *Statistica Cariereilor din tara*, 1897; Bucharest, 1898.

ROUMANIA—continued.

TABLE 464.

OUTPUT of MINERALS during the Years 1898 and 1899.*

Mineral.	1898.		1899.	
	Metric Tons.	Value.	Metric Tons.	Value.
		Lei.		Lei.
Lignite	67,000	562,000	78,000	624,000
Petroleum	180,000	4,400,000	313,000	9,300,000
Salt	108,079	(Monopoly.)	98,600	(Monopoly.)
Stone	8,100,000	6,700,000	4,800,000	3,968,000
Total value in Lei	—	11,662 000†	—	13,892,000†
„ £ Sterling	—	£466,480	—	£555,680

Russia.

Whether judged by the number of persons employed, or by the value of the products obtained, the workings in Russia for coal, gold, iron ore, manganese ore, petroleum, platinum, and salt, are worthy of much attention.

Coal.—The quantity of coal raised in Russia has risen very considerably of late, for the total output in 1882 was $3\frac{3}{4}$ million tons, and $12\frac{1}{4}$ million tons in 1898. The most productive coal region of Russia is the Donetz Basin, in the province of Ekaterinoslav, which yields anthracite and bituminous coal. In 1899 there were 135 different collieries in this basin, with pits varying in depth from 28 yards (26 metres) to 417 yards (382 metres). The number of persons employed in 1898 was about 40,000 underground and 10,000 above ground. The output of the basin, which in 1880 was only 624,000 tons, had risen in 1898 to 7,453,000 tons. The output per person employed therefore was only 150 tons per year. Mr. Taskine‡ explains this by the fact that owing to the number of fête days the Donetz miner works only 240 days in the year instead of 300. Next in importance comes Poland, with true coal and brown coal. The Dombrowski Basin,§ in Poland, yielded 3,827,700 tons in 1899. The Donetz Basin and Poland produce about two-thirds of the coal of Russia. The remaining coal regions|| worth mentioning are the Urals, the Eskibastus district south of Omsk, the Kusnetski Basin, in the Government of Tomsk, and the Tkvibulski district, in the Caucasus.

Coal is abundant in Siberia, both east and west, and even along the line of the Trans-Siberian Railway; but the quality is poor. A long list of localities is given by Mr. Cooke in his report upon the Trans-Siberian Railway.¶ The Ekibastuz coalfield alone, in the neighbourhood of Pavlodar, on the Irtysh, is estimated to have reserves of more than 3,000 millions of tons.

The coal of Saghalien is being worked on a large scale, and is used for steamships.

Copper.—Most of the copper of Russia comes from the Urals and the Caucasus.

* Official Return furnished by the "Département de l'Agriculture, du Commerce, de l'Industrie et des Domaines" Bucharest.

† Excluding value of salt.

‡ Taskine, *L'industrie Houillère dans le Bassin du Donetz*. St. Petersburg, 1900.

§ Consul-General Murray and Vice-Consul Kiemens, "Trade of Poland and Lithuania for the year 1899." *Dipl. and Cons. Reports*, No. 2425, Ann. Ser., 1900 [Cd. 1-62], p. 37.

¶ Cooke, "Coal Crisis in Russia." *Dipl. and Cons. Reports*, No. 523, Misc. Ser., 1900 [Cd. 2-6], p. 6.

¶ *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 17.

RUSSIA—continued.

Gold.—In 1898 the output* of gold of Russia was 2,346 poods, or 1,235,764 ozs. The gold is derived mainly from alluvial deposits in the Urals, and in Eastern and Western Siberia; the localities where it is being worked are shown upon a useful map prepared by M. de Batz.† According to Rickmer,‡ a large number of persons are employed in Eastern Bokhara in washing auriferous gravel. The value of the gold obtained is estimated at £20,000 to £30,000 annually.

Iron.—The known iron-ore districts of Southern Russia§ are :—(a) Krivoy Rog and neighbourhood, (b) Donetz Basin, (c) Kertch Peninsula, (d) Korsack Mogila, (e) Government of Voronej. The Kertch Peninsula appears to be the most favoured district, for its reserves are estimated to amount to 645 million tons. The ore contains on an average 38 to 40 per cent. of iron, 2 to 4 of manganese and 1 per cent. of phosphorus. The iron and steel industry of Russia|| is making rapid progress, which is evident from a comparison between 1882 and 1896 :—

TABLE 465.

Year.	Quantity Produced.		
	Pig Iron.	Wrought Iron.	Steel.
	Metric Tons.	Metric Tons.	Metric Tons.
1882	462,295	298,361	247,541
1896	1,622,142	498,453	1,023,118
1897	1,868,564	501,819	?

Manganese ore.¶—The output of the manganese mines of Chiatur in the Caucasus continues to increase. The shipments from Poti in 1899 reached the large total of 352,245 tons.

Peat.—Though peat may appear an unimportant fuel compared with coal, it nevertheless is so abundant and is so easily obtained in certain localities far removed from railways that it deserves special attention. In Russia there is an office under the Ministry of Agriculture and Domains (*Bureau de l'Industrie des Tourbes*) which supervises the peat industry. Many of the turbaries have been carefully tested by borings, and an official map exhibited at the Paris Exhibition gave information about 113 turbaries, occupying an area of 398 sq. miles (103,000 hectares); several are from 19 to 38 sq. miles (5,000 to 10,000 hectares) in area and over.

Petroleum.¶¶—The production of the oil wells near Baku continues to increase, the total output being 52,519,739** barrels (42 gallons) in 1899 against 48,596,853 barrels in the previous year. The Sabounchi field was the most productive of the five oil-fields near Baku. In the five districts there were in 1899 altogether 2,448 wells at which work was going on; 1,093, or less than half, were producing, whilst the remainder were either being bored, deepened, cleared out, or prepared. The average depth of the producing wells in 1899 was 735 feet on the Balakhany field, 938 on the Sabounchi, 1,130 on the Romany, 1,400 on the Bibi-Eibat, and 413 on the Binagadi.

Platinum.—All the platinum is obtained from alluvial deposits in the Urals.

* Cooke, "Trans-Siberian Railway," *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 18.

† "The auriferous deposits of Siberia," *Trans. Am. Inst. M.E.*, Vol. XXVIII., 1898.

‡ "Travels in Bokhara," *Geogr. Jour.*, London, Vol. XIV., 1899, p. 606.

§ Consul Hunt, "Trade of Taganrog and District for the year 1899," *Dipl. and Cons. Reports*, No. 2447, Ann. Ser., 1900 [Cd. 1-84], p. 5.

|| Official return furnished by the Department of Mines, St. Petersburg.

¶ Consul Stevens, "Trade of Batoum and District for the year 1899," *Dipl. and Cons. Reports*, No. 2124, Ann. Ser., 1900 [Cd. 1-61].

** U.S. Consul Chambers states that the net production in 1899, exclusive of petroleum wasted and consumed for fuel, was 54,137,423 barrels (42 gallons), *Eng. Min. Jour.*, Vol. LXIX., 1900, p. 527.

RUSSIA—continued.

Quicksilver.—All the quicksilver is obtained in the district of Ekaterinoslav, in South Russia; the deposits were first worked in 1885.

Salt.—More than half the salt is a harvest from lakes, especially in Astrakhan and the Crimea. Much salt is obtained by evaporating brine pumped up from boreholes, and some by mining beds of rock-salt.

In Western Siberia salt is obtained from a number of lakes which partially dry up in summer and in hot years deposit crusts of salt from two to four inches thick. The great Burlinsk Lake yields 20,000 tons yearly in this fashion.*

In Eastern Siberia the salt is obtained from springs, and from deposits of rock salt.*

Sulphate of sodium.—The great Marmischanski Lake, in the Government of Tomsk, is estimated to contain more than a million tons of sulphate of sodium; about 1,600 tons are obtained from it annually, and some of it is used for making soda.*

Sulphur.†—Native sulphur occurs in various parts of the Empire; it is worked in Daghestan and at Czarkowsky, in the Government of Kielce, near the Austrian frontier.

Zinc ore.—The zinc ore is obtained from deposits of calamine in Poland.

TABLE 466.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1896 and 1897.‡

Year.				Under-ground.	Above-ground.	Total.
1896	...	...	...	82,843	156,591	239,434
1897§	...	...	...

TABLE 467.

PERSONS EMPLOYED at the PRINCIPAL KINDS of MINES and other MINERAL WORKINGS during the Years 1896 and 1897.‡

Kind of Mineral worked.	Persons Employed during the Year.	
	1896.	1897.§
Coal	53,530	
Copper ore	3,263	
Gold	72,508	
Iron ore	38,210	
Manganese	2,562	
Naphtha	11,727	
Platinum	6,981	
Salt	16,338	
Silver-lead ore	1,915	

* Thiess, "Die Salzgewinnung in Siberien." *Zeitschr. B. H. Salinenwesen*, Vol. XLVI., 1898, p. 249.

† Consul-General Murray, "Trade of Warsaw and District for the year 1897." *Dipl. and Cons. Reports*, No. 2135, *Ann. Ser.*, 1898 [C. 8648—157].

‡ Official return furnished by the Department of Mines, St. Petersburg.

§ Figures for 1897 not yet available.

RUSSIA—continued.

TABLE 468.

PERSONS EMPLOYED at GOLD MINES during the Years 1896 and 1897.*

Year.	Number of Persons Employed.				
	Urals.	West Siberia.	East Siberia.	Finland.	Total.
1896	33,415	8,057	30,965	71	72,508
1897†					

TABLE 469.

QUANTITY of MINERALS produced during the Years 1897 and 1898.*

Mineral.	District whence Obtained.	1897.	1898.
		Quantity.	Quantity.
		Metric Tons.	Metric Tons.
Asbestos	Ural	1,022	1,666
Asphalt and mineral pitch	Syzran, Caucasus	22,222	‡
China clay	Volyn. Chernigov.. ..	5,036	‡
Chrome ore	Perm, Orenburg, Oufa	13,433	‡
Coal { Anthracite Coal Lignite	Donetz, Poland, Moscow, Ural, Kutais, Turkestan, Tomsk, Kirgiz Steppe, Saghalien, Oussoury. }	11,207,475	12,241,574
Cobalt ore and regulus	Caucasus	3	‡
Copper	Ural, Western Siberia, Caucasus, Finland	6,587	7,396
Gold	Ural, Eastern and Western Siberia, Lapland	Rub. 33,129	Rub. 33,333
Iron { Pig iron Wrought iron Steel	Ural, Central Russia, Poland, Southern Russia Northern Russia, Siberia, Finland.	1,868,564	2,300,000
	Ditto ditto ditto ditto ..	—	571,000
	Ditto ditto ditto ditto ..	—	1,161,000
Iron pyrites	Ural, Toula, Novgorod	19,380	‡
Lead	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Turkestan	450	241
Manganese ore	Kutais, Ural, Ekaterinoslav	368,808	330,546
Petroleum	Caucasus, Transcaspien, Turkestan	7,855,582	8,340,000
Phosphorite	Bessarabia, Kostroma, Podolia, Smolensk	5,917	—
Platinum	Ural	Rub. 5,806	Rub. 6,016
Quicksilver	Ekaterinoslav	616½	579
Salt { Rock salt Lake salt Salt from brine	Astrakhan, Perm, Ekaterinoslav, Crimea, Kharkov, Orenburg, Tomsk, Caucasus, &c. }	1,528,622	1,490,000
Silver	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Finland ..	Rub. 4,783	Rub. 8,213
Sulphate of sodium	Tiflis, Kuban, Tomsk, Vologda	7,280	‡
Sulphur	Daghestan, Poland, Turkestan	574	‡
Tin	Finland	2	‡
Zinc	Poland	5,879	5,879

* Official returns furnished by the Department of Mines, St. Petersburg.

† Figures for 1897 not yet available.

‡ Figures not yet available.

RUSSIA—*continue* '.

TABLE 470.

QUANTITY of IRON ORE produced in each District in 1896* and 1897.†

Region.	1896.		1897.	
	Number of Mines.	Quantity produced.	Number of Mines.	Quantity produced.
		Metric Tons.		Metric Tons.
Urals	651	1,346,273		
Central Russia	78	173,142		
South Russia	40	1,258,797		
Poland	109	296,482		
Siberia	10	27,594		
North Russia	7 and 22 lakes	22,903		
Finland	2 „ 129 „	75,631		
Caucasus	4	5,179		
Total ... }	901 and 151 lakes	3,206,001 }		

TABLE 471.

DEATHS from ACCIDENTS at the MINES and other WORKINGS for MINERALS during the Years 1895 and 1896.*

	Year.				Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1895	1896†		
	233	0.96

Sandwich Islands.§

The mineral industries of the Sandwich Islands are of slight importance. There are large deposits of gypsum, and red and yellow ochre; sulphur is found around the volcanoes.

The extraction of salt from sea water is carried on to supply local wants.

Saxony. (See GERMAN EMPIRE.)**St. Martin. (See DUTCH WEST INDIES.)****Senegal.||**

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives. In 1898, 129 kilograms of gold, valued at £15,464, were exported.

* Official return furnished by the Department of Mines, St. Petersburg.

† Figures for 1897 not yet available.

‡ 1896.

§ Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.

|| Consul Arthur, "Trade of Senegal and Dependencies for the year 1898," *Dipl. and Cons. Reports*, No. 2372, Ann. 1900 [Cd. 1-9], and *Min. Jour.*, Vol. LXVIII., 1898, p. 221.

Serbia.*

According to an official map Serbia is richly endowed with mineral wealth, but until railways have been constructed and the existing cart roads improved† it is idle to expect that it will become a great mining country. It possesses deposits of the ores of antimony, chromium, copper, gold, iron, lead and mercury, besides coal, gypsum, magnesite, marble and other stones for ornamental and building purposes.

Coal.—Most of the coal region lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are in the neighbourhood of Posarevatz.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley, near Tschuka.‡

Gold.—This was worked in Serbia by the Romans, and then many centuries later by the Austrians. Turkish invasions put a stop to mining, but now there are signs of a revival and extension of the industry. The gold is found in alluvial gravel and in quartz veins, especially in the district west of the River Timok, which forms the frontier of Bulgaria. Near Glogovica there are many veins of gold-bearing pyrites.

TABLE 472.

PERSONS EMPLOYED at MINES during the Years 1895 and 1896.

	Year.						Under and Above-ground.
	1895	...	...	...	...	...	1,391
	1896	...	...	...	...	...	1,433

In addition to the above, there were 120 persons employed in and about quarries.

TABLE 473.

QUANTITY and VALUE of MINERALS produced during the Years 1895 and 1896.

Mineral.	1895.		1896.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony (regulus) ...	48	33,281	—	—
Brown coal ...	41,008	238,007	50,635	470,946
Coal... ...	1,426	53,107	11,726	90,020
Copper (metal) ...	156	18,579	113	141,432
Lead do. ...	7	2,948	462	19,879
Lignite ...	19,537	100,046	24,705	127,912
Millstones ...	619	21,600	855	37,600
Zinc ore ...	8	?	—	—
Total value in francs ...	—	467,568	—	887,789
" " £ sterling ...	—	£18,703	—	£35,511

* Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce, and Industry, Belgrade.

† Consul Macdonald "Trade of Serbia for the years 1897-98." *Dipl. and Cons. Reports*, No. 2207, Ann. Ser., 1899 [C. 9044-53].

‡ *Berg-und huettenmaennische Zeitung*, Vol. LV., 1896, p. 299.

SERVIA—continued.

TABLE 474.

DEATHS from ACCIDENTS at MINES during the Years 1895 and 1896.

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
1895	4	2·88
1896	4	2·79

Siam.*

Siam produces gems, gold, and tin ore. The gems, rubies and sapphires, are obtained from shallow diggings on the flanks of the Patat range in the Cambodian Peninsula. The gem pits afford employment to five or six thousand Shans and Laos, and the value of the output is estimated to be about £300,000 annually. Alluvial gold exists and has been worked in many parts of Siam, notably near Lophburi; reef-mining has been carried on at Kabin and Wattana, and the former mine is already producing 200 ozs.† a month. A larger output will soon be forthcoming when the new crushing machinery has been erected.

The tin mines of the State are chiefly situated in the Siamese Malay Provinces, along the edge of the granites of the main ridge which forms the watershed of the Peninsula. The total annual output of metallic tin may be estimated at about 4,000 tons, giving employment to over 15,000 persons, mostly Chinese. The royalty on tin has now been reduced to 10 per cent. of the output, and this will enable a certain number of mines, which would not pay under the old royalty, to be re-worked.

Singkep. (See DUTCH EAST INDIES.)

Somali Coast Protectorate.‡

Mica is found and there are indications of iron ore.

Soudan. (See EGYPT.)

South African Republic.§

The South African Republic is now the greatest gold-producing country of the world, and its mineral resources are by no means confined to the precious metal; it is also yielding coal, diamonds, silver-lead ore, and tin ore; whilst the ores of antimony, cobalt, copper, mercury, and zinc are known to exist.

* M.S. communication from H. Warrington Smyth, and Bel, "Aperçu sur les gîtes minéraux de l'Indo-Chine Centrale." *Bull. Soc. Ind. Min.*, Vol. XII., 1898, p. 384.

† Vice-Consul Black, "Trade of Bangkok and District for the year 1897." *Dipl. and Cons. Reports*, No. 2,190, Ann. Ser. 1898 [C. 9044-16], and Consular-Assistant Carlisle, "Ibid. for 1898" [C. 9496-24].

‡ Consul-General Hayes Sadler, "Trade of the Somali Coast for the year 1898-99." *Dipl. and Cons. Reports*, No. 2,384 Ann. Ser., 1900 [C'd. 1-21].

§ *Rapport van het Hoofd van Mijnwezen over het Jaar, 1898*, Pretoria, 1899; and translation: *Report for the year ending 31st December 1898, as presented by the State Mining Engineer to the Government of the South African Republic, Pretoria, 1899.*

SOUTH AFRICAN REPUBLIC—*continued.*

Coal is worked chiefly in the Boksburg district, and the output is increasing gradually.* There are also good indications of coal in Swaziland.†

Diamonds.—There are alluvial diggings close to Christiana, and a “pipe” of “blue ground” similar to that of Kimberley has been discovered at Rietfontein, near Pretoria. The number of persons engaged in searching for diamonds is rapidly increasing.

Gold.—The following table shows the progress of the gold-mining industry since 1884. During the past five years the output has been more than doubled.

TABLE 475.

Year.					Value in £ sterling.	Increase on Previous Year £ sterling.
1884	...	...	...	...	10,096	—
1885	...	...	...	...	6,010	—
1886	...	...	...	...	34,710	28,700
1887	...	...	...	...	169,401	134,691
1888	...	...	...	...	967,416	798,015
1889	...	...	...	...	1,490,568	523,152
1890	...	...	...	...	1,869,645	379,077
1891	...	...	...	...	2,924,305	1,054,660
1892	...	...	...	...	4,541,071	1,616,766
1893	...	...	...	...	5,480,498	939,427
1894	...	...	...	...	7,667,152	2,186,654
1895	...	...	...	...	8,569,555	902,403
1896	...	...	...	...	8,603,821	34,266
1897	...	...	...	...	11,653,725	3,049,904
1898	...	...	...	...	16,240,630	4,586,905
1899	...	...	...	...	16,272,857	32,227
Total ...					86,501,460	—

The total output of fine gold in 1899, as calculated from the value, was 3,837,938 ozs.

The table below, prepared by the Government of the late South African Republic and exhibited at Paris,‡ shows how the proportion of the value of the gold extracted which has been paid as a dividend has increased, and how the proportion required to pay the cost of working has decreased year by year.

TABLE 476.

Year.					Dividend.	Cost of Working.
					Percentage of total value.	Percentage of total value.
1892	...	...	...	...	18·5	81·5
1893	...	...	...	...	20·5	79·5
1894	...	...	...	...	21·0	79·0
1895	...	...	...	...	26·7	73·3
1896	...	...	...	...	18·1	81·9
1897	...	...	...	...	26·4	73·6
1898	...	...	...	...	31·8	68·2
1899	...	...	...	...	30·7	69·3

In 1892 the average cost of working a ton of ore at the Rand mines represented 81·5 per cent. of the value of the gold it contained, whilst the profit was 18·5 per cent.

* Peile, “Transvaal Coalfield.” *Trans. Inst. M.E.*, Vol. XVI., 1898, p. 20, with a map.

† Consul Smuts, “Report for the year 1896 on the Trade, &c., of Swaziland.” *Dipl. and Cons. Reports*, No. 1,996, Ann. Ser., 1897 [C. 8648-18].

‡ *République Sud-Africaine. Exposition Universelle de 1900. Notice sur l'Exposition Minière.* Paris, 1900.

SOUTH AFRICAN REPUBLIC—*continued.*

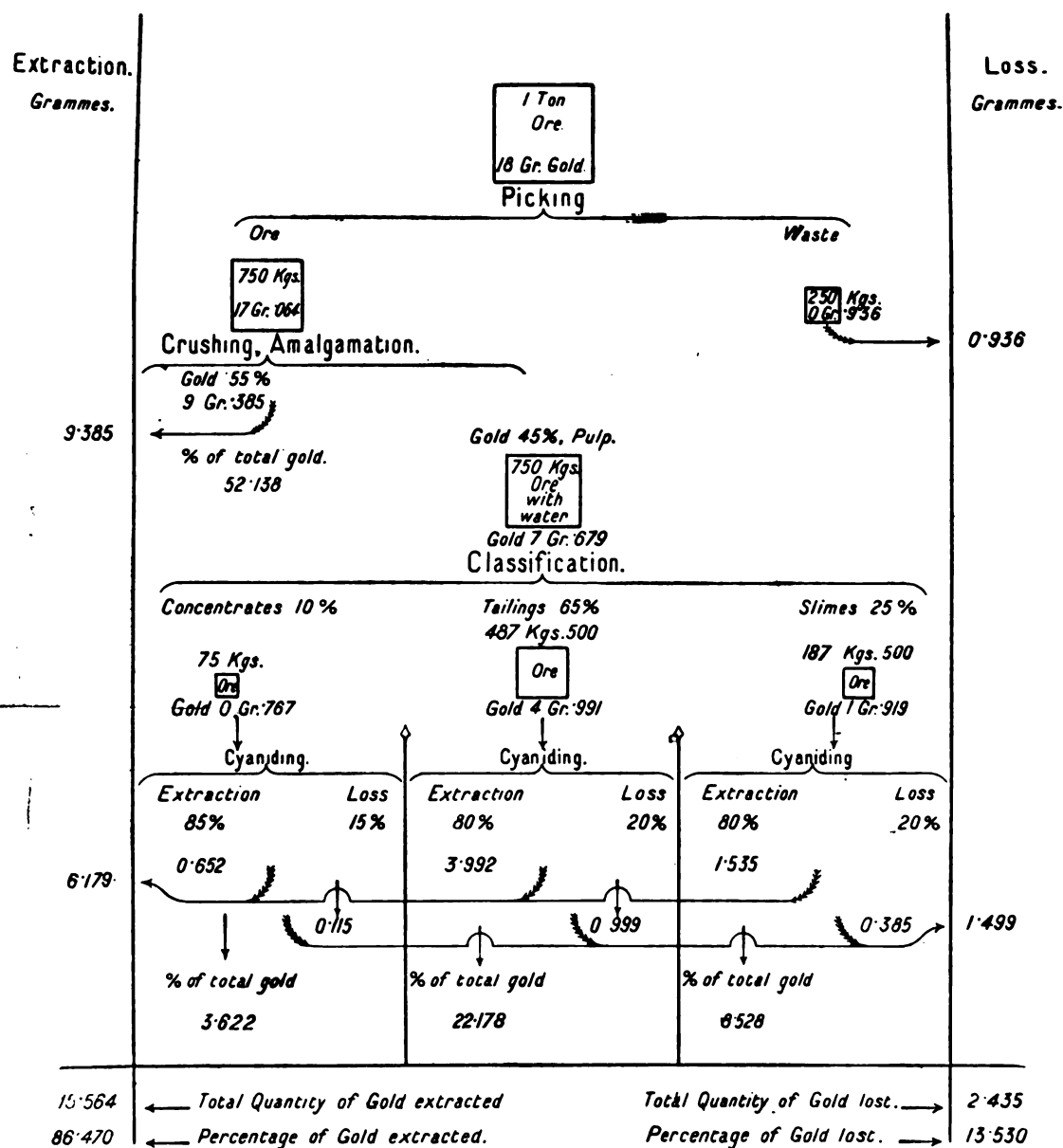
of that value. In 1898 the cost was 68·2 per cent. of the value, and the profit 31·8 per cent. of the value. The actual costs and dividends are given in Table 477.

TABLE 477.

Year.	Dividend per ton (2,000 lbs.) of ore treated.		Cost per ton (2,000 lbs.) of ore treated.	
	Francs.	s. d.	Francs.	s. d.
1892	9·85	7 10	44·35	35 2
1893	11·85	9 5	46·65	37 0
1894	12·90	10 3	48·50	38 6
1895	15·10	12 0	41·55	33 0
1896	8·95	7 1	40·00	31 9
1897	13·10	10 5	36·46	29 0
1898	16·45	13 1	35·20	28 0
1899	15·70*	12 6	35·50*	28 2

A well-planned figure below† shows very clearly the various stages of the process of extraction of gold from the ore and the proportion extracted and lost in each stage.

FIG. 15.



Gold-mining is being carried on successfully in Swaziland.

* Approximate. The proportion between the dividend and cost does not always agree precisely with the percentages given in Table 476, but as the differences are trifling the French figures have been copied exactly.
† République Sud-Africaine. Exposition Universelle de 1900. Notes sur l'Exposition Minière. Paris, 1900.

SOUTH AFRICAN REPUBLIC—*continued.*

Silver-lead ore.—Judging by the output of only 80 tons of ore, lead-mining is not flourishing.

Tin ore.—Tin has been produced from alluvial deposits on the Ryan Concession, Swaziland. The total output was 22·7 tons of clean tin ore, containing 75 per cent. of metal.

The following tables show the vast importance of the mining industry of the South African Republic:—

TABLE 478.

PERSONS EMPLOYED at all the GOLD MINES in 1898 and 1899.

Year.	Under-ground.			Above-ground.			Total Under and Above-ground.
	Whites.	Natives.	Total.	Whites.	Natives.	Total.	
1898	8,664	73,063	81,727	2,037	9,042	11,079	92,806
1899†							

TABLE 479.

PERSONS EMPLOYED at COAL MINES in 1898 and 1899.

Year.	Under-ground.		Above-ground.		Total Under and Above-ground.	
	Whites.	Natives.	Whites.	Natives.	Whites.	Natives.
1898	121	4,212	270	2,689	391	6,901
1899†						

TABLE 480.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Coal	1,938,424	668,346	†	
Diamonds	carats 22,843	43,730	†	
Gold	{ kilos. 119,136 ozs. 3,830,337* }	{ 16,240,630 }	{ kilos. 119,373 ozs. 3,837,938* }	{ 16,272,857 }
Silver-lead ore	81	500	†	
Tin ore	23	1,800	†	
Total value	—	16,955,006		

* Quantity estimated from the value, taking 1 oz. of fine gold as worth 84·8s.

† Figures for 1899 not available.

SOUTH AFRICAN REPUBLIC—continued.

TABLE 481.

QUANTITY and VALUE of FINE GOLD produced during the Years 1898 and 1899.

How obtained.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Ozs.	Kilos.	£	Ozs.	Kilos.	£
Free gold in milling ...	2,515,893	78,253	10,667,385			
Chemical treatment :—						
Tailings ...	1,039,832	32,342	4,408,889			
Concentrates ...	149,971	4,665	635,877			
Slimes ...	72,855	2,266	308,908			
Dry process ...	31,533	981	133,701			
Miscellaneous ...	19,109	594	81,023			
From alluvial deposits ...	1,144	35	4,847			
Total ...	3,830,337*	119,136	16,240,630	3,837,938*	119,373	16,272,857

TABLE 482.

DEATHS from ACCIDENTS at COAL MINES and GOLD MINES during the Years 1898 and 1899.

Kind of Mines.	1898.		1899.†	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal ...	27	3.70		
Gold ...	404	4.35		

TABLE 483.

DEATHS from ACCIDENTS at COAL MINES, classified according to CAUSE of ACCIDENT during the Years 1898 and 1899.

Cause of Accident.	1898.			1899.†		
	Persons Killed.			Persons Killed.		
	White.	Native.	Total Number of Deaths.	White.	Native.	Total Number of Deaths.
Ascent or descent in cages or skips ...	—	2	2			
Explosives ...	—	2	2			
Falling in shafts ...	—	1	1			
Falls of rock (in stopes, &c.) ...	—	16	16			
Machinery ...	1	1	2			
Trucks and tramping ...	—	3	3			
Miscellaneous ...	1	—	1			
Total ...	2	25	27			

* Quantity estimated from the value, taking 1 oz. of fine gold as worth 84.8s.

† Figures for 1899 not available.

SOUTH AFRICAN REPUBLIC—continued.

TABLE 484.

DEATHS from ACCIDENTS at all the GOLD MINES, classified according to CAUSE of ACCIDENT, during the Years 1898 and 1899.

Cause of Accident.	1898.			1899.*		
	Persons Killed.			Persons Killed.		
	White.	Native.	Total Number of Deaths.	White.	Native.	Total Number of Deaths.
Ascent or descent in cages or skips ...	13	58	71			
" " by ladders ...	—	6	6			
Boilers ...	—	5	5			
Explosives ...	18	69	87			
Falling in shafts ...	8	69	77			
Falling materials, &c. (in shafts, &c.) ...	3	15	18			
Falls of rock (in stopes, &c.) ...	7	75	82			
Machinery ...	4	22	26			
Suffocation by gases ...	2	3	5			
Trucks and tramways ...	1	17	18			
Miscellaneous ...	2	7	9			
Total ...	58	346	404			

Spain.†

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrites than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality, and it has lately become an important supplier of manganese ores.

In spite of its wonderful resources, the total number of persons employed in and about mines in Spain is only 80,000.

Coal.—Nine of the provinces produce coal. The total output is little more than two-and-a-half million tons, three-fifths coming from Asturias. Anthracite is worked on a small scale in the province of Cordova, and lignite in ten provinces; but the total output is insignificant.

Copper.—The Rio Tinto mines and its neighbours show no signs of impoverishment, for the output of the province of Huelva was 2,126,152 tons. Compared with this figure, the production of the other copper-bearing provinces, such as Seville, &c., is small.

Gold.‡—Mines are being worked in the province of Corunna.

Iron Ore.§—The province of Biscay, which includes the Bilbao district, is the great stronghold of the iron industry in Spain; most of the workings are open quarries, for out of a total of 12,152 persons employed, only 238 worked below ground. The total output of the province was 6,495,564 tons. Limonite (*rubio*) forms more than five-sixths of all the ore raised; the proportion of red hæmatite (*campanil*) is diminishing yearly, whilst that of spathose iron ore is increasing. The latter is calcined before being shipped.

Next in importance after Biscay comes the province of Santander with an output of 1,158,169 tons.

* Figures for 1899 not available.

† *Estadística Minera de España correspondiente al año de 1899.* Madrid, 1900.

‡ Consul Talbot. "Trade of Corunna and District for the Year 1899." *Dipl. and Cons. Reports*, No. 2,407, Ann. Ser., 1900 [Cd. 1-44].

§ Vice-Consul de Larrea. "Trade of Bilbao and District." *Dipl. and Cons. Reports*, No. 2,445, Ann. Ser., 1900 [Cd. 1-82].

SPAIN—continued.

Lead.—Most of the lead comes from the provinces of Jaen and Murcia; much of the ore, and especially that of Murcia, contains a notable amount of silver.

Manganese Ore.—Mining for manganese, comparatively speaking a new industry, is almost entirely confined to the province of Huelva. The output of the province in 1899, according to the official *Estadística Minera* (p. 43), was 104,408 tons; but the Consular Report* states it to be 148,419 tons.

Quicksilver.—From time immemorial the Almaden mine, in the province of Ciudad Real, has been renowned as a producer of cinnabar. The other quicksilver mines are of comparatively little importance; several are worked in the province of Oviedo.

Salt.—Much of the salt is obtained from sea water, especially in the vicinity of Cadiz.

Sulphur.—In addition to the sulphur contained in cupreous iron pyrites, Spain has mines of native sulphur near Lorca, in the province of Murcia. The mineral occurs in two beds, each 20 inches thick, on the Miocene rocks; it is treated, as in Sicily, by the *Calcarone* process.

Tin Ore and Wolfram.—These two minerals occur together in Spain as they do elsewhere; the two principal tin mines are near Noya and Pontevedra.

Zinc.—Stimulated by higher prices, the zinc mines increased their output very considerably. Murcia is the principal zinc-producing province, though Santander approaches it in output. The two countries between them produce five-sixths of the country's total.

TABLE 485.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.†

Year.	Men.	Women.	Boys.	Total.
1898	64,060	2,529	8,694	75,283
1899	67,296	3,063	9,899	80,258

TABLE 486.

PERSONS EMPLOYED in the PRINCIPAL MINING INDUSTRIES during the Years 1898 and 1899.†

Kind of Mines.	1898.				1899.			
	Men.	Women.	Boys.	Total.	Men.	Women.	Boys.	Total.
Brown coal (lignite) ...	664	32	112	808	730	31	108	869
Coal and anthracite ...	13,915	991	2,381	17,287	14,235	1,161	2,679	18,075
Copper ore and cupreous pyrites.	7,284	191	873	8,348	7,329	183	939	8,451
Iron ore	17,757	112	1,613	19,482	20,120	238	1,897	22,255
Lead ore	17,135	521	2,528	20,184	16,558	606	2,476	19,640
Quicksilver ore	1,884	2	170	2,056	1,915	3	177	2,095
Zinc ore	1,555	148	274	1,977	1,696	165	343	2,204
Other mines	3,866	532	743	5,141	4,713	676	1,280	6,669
Total	64,060	2,529	8,694	75,283	67,296	3,063	9,899	80,258

* Consul Vecqueray, "Trade of Cadiz and District," *Dipl. and Cons. Reports*, No. 2406, Ann. Ser. 1900 [Cd. 1—43], p. 20.† *Estadística Minera de España correspondiente al año 1898 and ibid. 1899*, Madrid, p. 24.

SPAIN—*continued.*

TABLE 489.

DEATHS from ACCIDENTS at MINES, classified according to CAUSE, during the Years 1898 and 1899.*

Cause.	1898.		1899.	
	Number of Deaths by Accidents.	Percentage of Total.	Number of Deaths by Accidents.	Percentage of Total.
Falls of ground	40	18·7	44	19·8
Explosions of firedamp	58	27·1	4	1·8
Blasting	9	4·2	27	12·2
Suffocation by gases	2	0·9	15	6·7
Falling down shafts	21	9·8	25	11·3
Breaking of machinery, &c.	25	11·7	30	13·5
Miscellaneous	59	27·6	77	34·7
Total	214	100·0	222	100·0

Spitzbergen.†

Coal has been discovered in several places in Spitzbergen. Bear Island is said to possess workable seams of excellent coal.

Sumatra. (See DUTCH EAST INDIES.)

Surinam. (See DUTCH GUIANA.)

Sweden.‡

Coal.—The fourteen Swedish collieries are in Scania, the most southerly province of the kingdom. The seams, which are of Rhætic age, are interstratified with beds of fire-clay, and the two minerals are worked together.§ The thickness of the coal seams, including the partings of shale, varies from three to five feet.

Copper.—The well-known Stora Kopparberg mine close to Falun furnishes much of the copper of Sweden, some of the silver, and nearly all of the gold.

* *Estadística Minera de España correspondiente al año 1898 and ibid. 1899, Madrid, pp. 26 and 27.*

† *B.u.h. Zeitung.* Vol. LIX., 1900, p. 476.

‡ *Bidrag till Sveriges Officiella Statistik för år 1899, Stockholm, 1900.*

§ Nordenström, *L'industrie minière de la Suède, Stockholm, 1897.*

SWEDEN—continued.

Iron ore.—Sweden, which has long been famous as an iron-producing country, is likely to furnish important supplies of ore to this country in the near future, when the vast deposits in the province of Norrbotten, within the Arctic Circle, are rendered available for export at all seasons of the year by railway communication with the west coast of Norway. The Gellivare mines, which are connected by rail with the port of Luleå on the Gulf of Bothnia, furnished 956,162 * tons in 1899, or more than one-third of the total output of iron ore in Sweden. Still further north lie the deposits of Kiirunavaara and Luossavaara, which, according to Lundbohm † “are the largest individual deposits of the kind in Scandinavia, while in all Europe and America their rivals in size are few in number; they consist principally of magnetite, and the remaining part is also magnetic, though here mixed with hæmatite.” Kiirunavaara has just entered the list as a producer.

Lundbohm's useful little map shows the course of the proposed railway from Gellivare to Victoria-harbour on the Ofoten-fjord, in latitude 68° 30' N. This railway is now laid as far as Luossavaara, and will be completed, it is expected, in 1903.*

Peat.—The table of production takes no account of either the peat diggings or of the stone quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould.

Stone.—Granite, using the word in its commercial sense, is quarried on the West Coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden.

Portland cement is manufactured in several places, and the total annual production is about 335,000 casks.

Zinc.—The Ämmeberg mines supply most of the zinc ore, which is exclusively blende.

TABLE 490.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1898 and 1899.

Year.	Kind of Workings.	Under-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1898	Coal mines	1,185	86	1,271	357	35	392	1,663
„	Iron „	3,869	103	3,972	4,216	1,086	5,302	9,274
„	Other „	1,060	5	1,065	790	431	1,221	2,286
„	Feldspar quarries ...	70	1	71	136	97	233	304
	Total for 1898 ...	6,184	195	6,379	5,499	1,649	7,148	13,527
1899	Coal mines	1,222	107	1,329	350	40	390	1,719
„	Iron „	3,834	112	3,946	4,161	956	5,117	9,063
„	Other „	931	4	935	731	374	1,105	2,040
„	Feldspar quarries ...	86	—	86	99	90	189	275
	Total for 1899 ...	6,073	223	6,296	5,341	1,460	6,801	13,097

* Consul MacGregor, “Trade of Stockholm and the Eastern Coast of Sweden for the year 1898.” *Dipl. and Cons. Reports*, No. 2317, Ann. Ser., 1899 [C. 9044-143], and corresponding report for 1899. No. 2401 [Od. 1-38].
† The iron-ore fields at Kiirunavaara and Luossavaara in the Province of Norrbotten, Stockholm, 1898.

SWEDEN—continued.

TABLE 491.

QUANTITY of MINERALS obtained from MINES and FELDSPAR QUARRIES during the Years 1898 and 1899.

Mineral.	Year.			
	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum	153	16,827	164	18,210
Coal	236,277	1,725,689	239,344	1,797,180
Cobalt oxide	kil. 3,001	37,500	kil. 1,345	16,800
Copper ore	23,335	369,439	22,334	409,119
Copper, sulphate	1,165	292,000	1,287	400,000
Feldspar	20,737	239,154	16,017	185,338
Fire-clay... ..	131,391	208,245	129,875	204,144
Gold ore... ..	2,136	24,309	—	—
Graphite (raw and dressed)	50	6,000	535	6,200
Iron ore	2,302,914	11,001,705	2,435,200	13,438,525
Iron pyrites	386	3,840	150	1,350
Iron, sulphate	124	6,602	105	5,491
Manganese ore	2,358	41,270	2,622	44,740
Manganese ore in powder	363	16,335	377	17,000
Silver and lead ore	6,743	198,632	5,730	222,480
Sulphur	50	6,000	—	—
Zinc ore	61,627	2,235,730	65,159	2,755,069
Other minerals	—	—	—	64,304
Total value in crowns	—	16,429,277	—	19,585,950
" " £ sterling	—	£902,707	—	£1,088,979

TABLE 492.

PERSONS KILLED and INJURED by ACCIDENTS at MINES and FELDSPAR QUARRIES during the Years 1898 and 1899.

Year.		Number of Persons Killed.	Number of Persons Injured.*	Death-rate per 1,000 Persons Employed.
1898	... ..	14	318	1.03
1899	... ..	16	285	1.22

Switzerland.†

That the mineral industries of Switzerland are of little importance is evident from the following tables ; nevertheless the kinds of mineral which are being obtained from underground workings are numerous, viz.: anthracite, bituminous limestone, brown coal, cobalt and nickel ore, fireclay, gold ore, graphite, gypsum, iron ore, limestone, magnesium sulphate, marble, marl, potstone, salt, sandstone, and slate.

* Injuries causing absence from work for 14 days at least.

† *Rapports des Inspecteurs Fédéraux des Fabriques et des Mines dans les années 1898 et 1899*, Aarau, 1900 ; and *Notice sur les exploitations minérales de la Suisse*, Geneva, 1896.

SWITZERLAND—continued.

The Report of the Federal Inspector of Mines contains, as an Appendix, a circular addressed to the Cantonal authorities explaining the nature of the works placed under his charge. These are as follows :—

- (1.) *All mines properly so called, i.e., open or underground workings for the extraction of metallic ores, fossil fuel (excepting peat), bituminous or salt-bearing minerals.**
- (2.) *All quarries wholly or partly underground, including even those which have but a single underground excavation for a special purpose, such as conveyance, drainage, &c.*
- (3.) *Open quarries, adjacent to other workings, placed under the Inspectors of Mines, and belonging to the same proprietor.*
- (4.) *The works where the products from workings classed under (1), (2) and (3) are picked, or treated mechanically or otherwise manipulated, if they belong to the same firm as the workings, and if they are not under the Factory law and so already under Federal inspection.*
- (5.) *The installations and services of all kinds for the conveyance from the workings, cited under headings (1), (2), (3) and (4), to a main road, a railway, steamboat pier, or as far as the boundary of a factory under another inspector. The Inspector of Mines should, however, visit in this factory any stores of explosives intended for workings under his jurisdiction, should any such stores exist.*

Anthracite.—Two mines, Chandoline and Granges, produce annually 1,500 to 2,000 tons of anthracite containing a high percentage of ash.

Bituminous limestone.—The asphalt rock of the Val de Travers, which is exported from Switzerland to various countries, is a bituminous limestone of Cretaceous age. The bed is 4 to 8 m. thick, and contains about 10 per cent. of bitumen.

Brown coal and cement.—With reference to the Swiss brown coal, which is of Miocene age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure.

Iron.—The largest workings for iron are at Delsberg, a mine which employs 136 workmen.

Salt.†—Switzerland possesses five workings for salt, viz., Bex salt mine in the Rhone valley; the brine wells of Rheinfelden, Ryburg, and Kaiseraugst, in the Canton Aargau; and the brine well Schweizerhalle in the Canton Baselland. The annual output now approaches 50,000 tons.

TABLE 493.

NUMBER of PERSONS EMPLOYED at MINES and UNDERGROUND QUARRIES during the Years 1897-8 and 1898-9.

Kind of Workings.	1897-8.		1898-9.	
	Number of Works.	Number of Persons Employed.	Number of Works.	Number of Persons Employed.
Mines	20	459	22	405
Underground quarries ...	107	1,405	115	1,472
Total	127	1,864	137	1,877

* Excluding ordinary mineral waters or borings for salt without other underground workings.

† *Statistisches Jahrbuch der Schweiz*; Bern, Vol. VII., 1898, p. 106.

SWITZERLAND—continued.

TABLE 494.

NUMBER of WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year 1898-99.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Anthracite	5	—	30	—
Asphalt	1	—	120	—
Brown coal	2	—	17	—
Brown coal and cement stone	7	—	56	—
Cement stone and hydraulic limestone	—	29	—	299
Cobalt and nickel ores	1	—	10	—
Gold and copper ore	1	—	2	—
Graphite	1	—	8	—
Gypsum	—	13	—	84
Iron ore	1	—	108	—
Lead ore, argentiferous	1	—	16	—
Limestone... ..	—	2	—	10
Magnesia, sulphate of	1	—	12	—
Marble	—	1	—	14
Potstone	—	1	—	23
Salt (rock salt)	1	—	26	—
Sandstone	—	9	—	370
Slate	—	59	—	668
	—	1	—	4
Total	22	115	405	1,472

TABLE 495.

QUANTITY of MINERALS produced during the Years 1897 and 1898.

Mineral.	Year.	
	1897.	1898.
	Metric Tons.	Metric Tons.
Anthracite	*	*
Bituminous limestone	*	*
Brown coal	*	*
Cement (Portland)	148,477	157,447
„ (Roman)	11,375	11,596
Cobalt and nickel ore... ..	*	*
Fireclay	*	*
Gold ore	*	*
Graphite	*	*
Gypsum	55,792	57,209
Iron ore	*	*
Lime (hydraulic)	196,184	205,035
Magnesium sulphate	*	*
Marble	*	*
Marl	*	*
Potstone	*	*
Pozzolana	900	900
Salt (Bex mine and brine wells)	44,108	50,717
Sandstone	*	*
Slate	*	*

* Figures not available.

SWITZERLAND—*continued.*

TABLE 496.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1897–1899.

Kind of Workings.	1897–8.		1898–9.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines	1	2·18	1	2·47
Underground quarries	3	2·14	4	2·72

Tong-King. (See INDO-CHINA.)

Tunis.

Tunis cannot be called an important mining country at the present time.

*Phosphate of lime.**—This mineral is found in the Lower Eocene rocks, especially to the north and south of the mountain chain running from Wady Stah, near Gafsa, to Tamerza; the beds may be followed for a distance of about 40 miles. The crude rock contains from 58 to 62 per cent. of phosphoric acid.

The value of the phosphate deposits at Gafsa is now beyond all question. The company† employs 850 persons at its workings. The quantity shipped from Sfax in 1899 was 63,690 tons; and more than that amount had already been sent away in the first six months of the present year.

The line open to the public is 243 kilometres (157 miles) long, and 5 more kilometres (3 miles), for the use of the mines and drying works, make a total of 248 kilometres (160 miles) belonging to the company.

The line was opened for regular traffic on 20th November, 1899.

Salt.—This mineral is obtained from salt marshes and lakes, especially at Rhadès. The salt-pans worked by the State produced in 1897 8,100 tons of salt which was sold at about 24 francs per ton, and in 1898, 7,300 tons at 22 francs per ton.

An important salt lake at La Soukhra, near Tunis, fed by salt-water from the sea and covering an area of more than 15 square miles, becomes completely dried up in summer, and leaves a deposit of salt from 3 to 6 inches in thickness. 8,000 tons of salt were exported from this lake in 1899. The total thickness of salt in the middle of the dried up lake is 4 feet, and gradually diminishes towards the sides.

Zinc ore.—Calamine is worked in several places, and after being calcined is shipped to France and Belgium.

* *Etude des gisements de phosphates de Gafsa et du Chemin de fer de Sfax à Gafsa*, Paris, 1896

† *Compagnie des phosphates et du chemin de fer de Gafsa (Tunis)*. *Rapport du Conseil d'administration*, Paris, 1900, p. 4.

TUNIS—continued.

TABLE 497.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.*

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Flags	—	—	2,000	20,000
Lead ore	2,375	188,400	3,319	361,640
Limestone	—	—	12,000	240,000
Marble	600	—	—	—
Phosphate of lime	—	—	70,000	840,000
Plaster	10,800	—	10,200	255,000
Potter's clay	5,800	—	5,800	11,600
Salt from marshes and salt lakes	7,300	160,600	8,850	177,000
Stone (dressed for building)	295,000	—	190,000	320,000
„ (broken)	67,000	—	45,000	67,000
Zinc ore (calcined)	21,763†	1,081,700	20,029	1,567,217

Turkey.‡

The mineral resources of the Ottoman Empire are great, but almost entirely undeveloped. No official statistics are published.

Alum.—A little alum is manufactured.

Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895. In 1899 the quantities exported from Smyrna and Salonica amounted to 1,173 tons, valued at £16,392.§

Arsenic.—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly; both orpiment and realgar are mined in Macedonia.

Asphalt.—This mineral is being mined near Salonica, and it is known to exist in other places.

Boracite.—Borate of calcium, known in the trade as boracite, and to mineralogists as pandermite, is worked near the port of Panderma in Asia Minor. The annual output is from 10,000 to 11,000 tons.||

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1898 et pour l'année 1899.*

† Exclusive of 3,000 tons of calamine from prospecting operations.

‡ Helmacker, "The Useful Minerals of Turkey," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 635.

§ Consular Assistant Avalon Shipley, "Trade of Salonica and District for the year 1899." *Dipl. and Cons. Reports*, No. 2,468, Ann. Ser., 1900 [Cd. 1-105]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-99," *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99], p. 23.

|| *Oest. Zeitsch. f. B u. Hüttenwesen*, Vol. XLIV., 1897, p. 243.

TURKEY—continued.

Chrome ore.—Chromite occurs in irregular bunches in serpentine; 4,467 tons, valued at £18,948, were shipped from Salonica and Smyrna in 1899.*

Coal.—The only coal mines deserving mention at the present time are near Eregli, the ancient Heraclea. Bituminous coal and lignite are known in other parts of the Empire. The output is estimated to be about 176,000 tons annually.†

Copper.—Copper ores have been worked in various places; nowadays the output is extremely small. 1,316 tons of copper from Arghana Maden‡ were shipped at Alexandretta in 1899.

Emery.—This mineral was discovered in Asia Minor about fifty years ago; 16,051 tons, valued at £56,742, were shipped from Smyrna in 1899.*

Fuller's earth is quarried on a large scale near Angora.†

Gold.—A little alluvial gold is obtained in Thessaly and in some of the valleys of Macedonia. The river Pactolus, so famous in ancient times, no longer yields gold.

Iron.—The deposits of iron ore which were utilized in former days have ceased to be worked.

Manganese.—There are manganese mines in Macedonia and in Asia Minor. 48,689 tons of ore, valued at £426,029, were exported from Salonica in 1899.*

Marble.—Beautiful mottled marble is now being quarried in the Island of Scio.*

Meerschaum.—Mining meerschaum is an industry of some importance near Broussa in Asia Minor, where sometimes 1,000 men are employed.† The output is about 60 tons of clean meerschaum yearly.

Petroleum.—No attempt has been made to ascertain the value of the oil springs known in old Servia, near Broussa, and in Armenia.

Salt.—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. The rock salt mines are worked near Van in Armenia. 203,128* tons of salt were produced in the year 1893-4. Rock salt is also widely distributed over many parts of Tehama.§

Silver-lead.—Deposits of argentiferous galena appear to be worked on a small scale at Edremid and near Adana.

Zinc Ore.—Calamine deposits are worked by a French company in the Island of Scio.*

United States.||

The United States are the greatest producers of coal, iron, and copper in the world.

Coal.¶—The total production of coal in 1899 was 230,254,076 metric tons, of which 54,825,776 tons were anthracite and 175,428,300 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

* Consular-Assistant Avalon Shipley, "Trade of Salonica and District for the Year 1899." *Dipl. and Cons. Reports*, No. 2,468, Ann. Ser., 1900 [Cd. 1-105]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-99." *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99].

† *Oest. Zeitsch. f. B. u. Hüttenwesen*, Vol. XLIV., 1897, p. 223.

‡ Consul Barnham, "Trade of Vilayet of Aleppo for the Year 1899." *Dipl. and Cons. Reports*, No. 2,404, Ann. Ser., 1900 [Cd. 1-41].

§ Consul Devey, "Trade of Jeddah and Hodeidah for the Year 1897." *Dipl. and Cons. Reports*, No. 2,203, Ann. Ser., 1899 [C. 9044-29].

¶ Many useful statistics relating to the United States and much valuable information concerning mines and minerals all over the world are contained in Mr. Rothwell's annual volumes entitled, *The Mineral Industry: Its Statistics, Technology, and Trade*.

¶ Parker, "The Production of Coal in 1899." *Twenty-first Annual Report of the U.S. Geological Survey*, 1899-1900, Washington, 1900.

TUNIS—continued.

TABLE 497.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.*

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Flags	—	—	2,000	20,000
Lead ore	2,375	188,400	3,319	361,640
Limestone	—	—	12,000	240,000
Marble	600	—	—	—
Phosphate of lime	—	—	70,000	840,000
Plaster	10,800	—	10,200	255,000
Potter's clay	5,800	—	5,800	11,600
Salt from marshes and salt lakes	7,300	160,600	8,850	177,000
Stone (dressed for building)	295,000	—	190,000	320,000
„ (broken)	67,000	—	45,000	67,000
Zinc ore (calcined)	21,763†	1,081,700	20,029	1,567,217

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Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895. In 1899 the quantities exported from Smyrna and Salonica amounted to 1,173 tons, valued at £16,392.§

Arsenic.—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly; both orpiment and realgar are mined in Macedonia.

Asphalt.—This mineral is being mined near Salonica, and it is known to exist in other places.

Boracite.—Borate of calcium, known in the trade as boracite, and to mineralogists as pandermite, is worked near the port of Panderma in Asia Minor. The annual output is from 10,000 to 11,000 tons.||

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1898 et pour l'année 1899.*

† Exclusive of 3,000 tons of calamine from prospecting operations.

‡ Helmhacker, "The Useful Minerals of Turkey," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 635.

§ Consular Assistant Avalon Shipley, "Trade of Salonica and District for the year 1899." *Dipl. and Cons. Reports*, No. 2,468, Ann. Ser., 1900 [Cd. 1-105]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-99," *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99], p. 23.

|| *Oest. Zeitsch. f. B u. Hüttenwesen*, Vol. XLIV., 1897, p. 223.

TUNIS—continued.

TABLE 497.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.*

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Flags	—	—	2,000	20,000
Lead ore	2,375	188,400	3,319	361,640
Limestone	—	—	12,000	240,000
Marble	600	—	—	—
Phosphate of lime	—	—	70,000	840,000
Plaster	10,800	—	10,200	255,000
Potter's clay	5,800	—	5,800	11,600
Salt from marshes and salt lakes	7,300	160,600	8,850	177,000
Stone (dressed for building)	295,000	—	190,000	320,000
„ (broken)	67,000	—	45,000	67,000
Zinc ore (calcined)	21,763†	1,081,700	20,029	1,567,217

Turkey.‡

The mineral resources of the Ottoman Empire are great, but almost entirely undeveloped. No official statistics are published.

Alum.—A little alum is manufactured.

Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895. In 1899 the quantities exported from Smyrna and Salonica amounted to 1,173 tons, valued at £16,392.§

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* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1898 et pour l'année 1899.*

† Exclusive of 3,000 tons of calamine from prospecting operations.

‡ Helmacker, "The Useful Minerals of Turkey." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 635.

§ Consular Assistant Avalon Shipley, "Trade of Salonica and District for the year 1899." *Dipl. a.* No. 2,468, Ann. Ser., 1900 [Cd. 1-105]. Consul-General Cumberbatch, "Trade of Smyrna and District for 1899." *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99], p. 23.

|| *Oest. Zeitsch. f. B u. Hüttenwesen*, Vol. XLIV., 1897, p. 223.

Chrome ore.—Chromite occurs in irregular bunches in serpentine; 4,467 tons, valued at £18,948, were shipped from Salonica and Smyrna in 1899.*

Coal.—The only coal mines deserving mention at the present time are near Eregli, the ancient Heraclea. Bituminous coal and lignite are known in other parts of the Empire. The output is estimated to be about 176,000 tons annually.†

Copper.—Copper ores have been worked in various places; nowadays the output is extremely small. 1,316 tons of copper from Arghana Maden‡ were shipped at Alexandretta in 1899.

Emery.—This mineral was discovered in Asia Minor about fifty years ago; 16,051 tons, valued at £56,742, were shipped from Smyrna in 1899.*

Fuller's earth is quarried on a large scale near Angora.†

Gold.—A little alluvial gold is obtained in Thessaly and in some of the valleys of Macedonia. The river Pactolus, so famous in ancient times, no longer yields gold.

Iron.—The deposits of iron ore which were utilized in former days have ceased to be worked.

Manganese.—There are manganese mines in Macedonia and in Asia Minor. 48,689 tons of ore, valued at £426,029, were exported from Salonica in 1899.*

Marble.—Beautiful mottled marble is now being quarried in the Island of Scio.*

Meerschaum.—Mining meerschaum is an industry of some importance near Broussa in Asia Minor, where sometimes 1,000 men are employed.† The output is about 60 tons of clean meerschaum yearly.

Petroleum.—No attempt has been made to ascertain the value of the oil springs known in old Servia, near Broussa, and in Armenia.

Salt.—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. The rock salt mines are worked near Van in Armenia. 203,128* tons of salt were produced in the year 1893-4. Rock salt is also widely distributed over many parts of Tehama.§

Silver-lead.—Deposits of argentiferous galena appear to be worked on a small scale at Edremid and near Adana.

Zinc Ore.—Calamine deposits are worked by a French company in the Island of Scio.*

United States.||

The United States are the greatest producers of coal, iron, and copper in the world.

Coal.¶—The total production of coal in 1899 was 230,254,076 metric tons, of which 54,825,776 tons were anthracite and 175,428,300 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

* Consular-Assistant Avalon Shipley, "Trade of Salonica and District for the Year 1899." *Dipl. and Cons. Reports*, No. 2,468, Ann. Ser., 1900 [Cd. 1-105]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-99." *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99].

† *Oest. Zeitsch. f. B. u. Hüttenwesen*, Vol. XLIV., 1897, p. 223.

‡ Consul Barnham, "Trade of Vilayet of Aleppo for the Year 1899." *Dipl. and Cons. Reports*, No. 2,404, Ann. Ser., 1900 [Cd. 1-41].

§ Consul Devey, "Trade of Jeddah and Hodeidah for the Year 1897." *Dipl. and Cons. Reports*, No. 2,203, Ann. Ser., 1899 [Cd. 9044-29].

¶ Many useful statistics relating to the United States and much valuable information concerning mines and minerals all over the world are contained in Mr. Rothwell's annual volumes entitled, *The Mineral Industry: Its Statistics, Technology, and Trade*.

¶ Parker, "The Production of Coal in 1899." *Twenty-first Annual Report of the U.S. Geological Survey*, 1899-1900, Washington, 1900.

UNITED STATES—continued.

In the case of anthracite there is an increase of nearly 6,400,000 tons, whilst bituminous coal shows the enormous rise of more than 24 million tons; taking anthracite and bituminous coal together, there is a net increase of nearly 31 million tons.

Mr. Parker, the statistician of the United States Geological Survey, furnishes an interesting report* concerning the coal mined by machines during the last three years, and there is no doubt that the enormous increase in the output has been largely due to machine mining.

TABLE 498.

BITUMINOUS COAL MINED by MACHINES in the UNITED STATES during the Years 1897-9.

States.	Year.		
	1897.	1898.	1899.
	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).
Colorado	352,400	225,646	527,115
Illinois	3,946,257	3,415,635	6,085,312
Indiana	1,023,361	1,414,342	1,713,125
Kentucky	1,299,436	1,366,676	1,625,809
Montana	720,345	681,613	843,710
Ohio	3,843,345	5,191,375	6,822,524
Pennsylvania	8,925,293	16,512,480	22,000,722
West Virginia	673,523	1,323,929	1,881,125
Wyoming	555,526	631,431	693,712
Other States producing less than half a million tons each annually.	1,309,734	1,650,017	1,770,779
Total	22,649,220	32,413,144	43,963,933

He sums up his data by showing that whereas the amount of coal mined by machinery in 1896 formed 14·17 per cent. of the total output, it was no less than 23 per cent. of the total output for last year.

The importance of machine mining in the United States will be appreciated if one points out that the amount obtained in this manner largely exceeds the total output of either Belgium, France, or Austria.

Further particulars concerning the substitution of machines for hand labour will be found in the reports of the Illinois State Bureau of Labour Statistics,† to one of which a reference was made last year.

More than a quarter of the coal obtained in Illinois was extracted by the aid of coal-cutting machinery with a gain of about 7*d.* a ton, for the average price paid for all hand mining was \$0·471, for machine mining \$0·3134.

* Parker, "The Production of Coal in 1899." *Twenty-first Annual Report of the U.S. Geological Survey, 1899-1* Washington, 1900, p. 61.

† *Eighteenth Annual Coal Report prepared by the Illinois Bureau of Labor Statistics, 1899, Springfield, Ill., 1899.*

UNITED STATES—*continued.*

Copper.—There are three great copper States : Montana, Michigan, and Arizona ; the first furnished in 1899 more than 40 per cent. of the total output of the whole country, which was 265,582 metric tons of metal.

Gold.—The principal gold-producing states are Colorado with a yield in 1899 of 1,256,920 ozs., and California with a product of 735,194 ozs.

Iron.—The two chief iron-producing States are Michigan and Minnesota ; the former produced more than 9 million tons in 1899, and the latter more than 8 millions. The total output of the United States was 25 million tons, an increase of more than 5 million tons compared with 1898.

Lead.—Idaho was the greatest producer in 1898, followed closely by Colorado; whilst Utah and Montana are likewise large lead-producing States. For the first time for several years the output of lead shows a decrease.

Natural Gas.—The value of the natural gas obtained from boreholes is more than 4 millions sterling, and consequently this gaseous mineral well deserves a place in the statistics.

Petroleum.—The yield of the oil-wells of the United States far surpasses that of all the rest of the world put together. In 1899 the production was 57,070,850 barrels of 42 gallons.

The principal oil-producing States are Pennsylvania, New York, West Virginia, Ohio, and Indiana.

Phosphate of lime.—The three great phosphate States are Florida, South Carolina, and Tennessee.

Quicksilver.—With the exception of the small quantity from Tennessee all the quicksilver comes from California.

Silver.—Colorado, in spite of its slightly decreased production, yields about two-fifths of the total output of silver, and Montana nearly one-third.

Zinc.—Zinc ore is abundant in the United States ; Illinois, Indiana, Kansas, and Missouri produce the bulk of the zinc.

It is beyond the province of this Report to enter into minute details concerning each individual State ; but a few facts relating to those in which mining is one of the important industries may with propriety be inserted from time to time.

COLORADO.

Judged by the value of its metallic output, which is now about ten millions sterling, Colorado is the most important ore bearing State in the Union ; it likewise takes the first place as a gold producer. Its capabilities are well summed up in Mr. Richard Pearce's last report.*

* "Mining Industry of Colorado." *Dipl. and Cons. Reports*, No 532, Misc. Ser., 1900 [Cd. 2-15], p. 13.

UNITED STATES.—COLORADO—*continued.*

TABLE 499.

QUANTITY of METALS produced in COLORADO during the Year 1899.

Kind of Metal.					Quantity.	Value.
Gold	...	...	...	...	Fine ozs., 1,282,471	£ 5,443,260
Silver	...	...	...	...	" " 23,114,688	2,827,871
Lead	...	...	..	...	Tons of 2,240 lbs., 61,629	1,267,098
Copper	...	...	...	...	" " " 4,739	383,813

More than half the gold of Colorado comes from the Cripple Creek district in Teller County, situated west of Pike's Peak, and at an altitude of 9,000 to 10,000 feet above the sea level. Gold was not discovered there till 1891, and now its mines are yielding nearly 800,000 ozs. a year. The value of the gold produced by the Cripple Creek district in 1899 was \$16,000,000 or more than 3 millions sterling.

There are between 31,000 and 32,000 persons employed in the metalliferous mines of this State.

ILLINOIS.

Among the coal-producing States, Illinois comes second, though a very long way behind Pennsylvania. The output of Illinois in 1899 was more than 22 million metric tons, equal to that of Belgium.

The death-rate from accidents,* which exceeds 2 per 1000 persons employed, is still high; unfortunately the accident statistics are not arranged so as to enable the underground death-rate to be calculated separately. The record for a period of seventeen years shows that falls of roof and side occasion 56 per cent. of all the deaths from accidents.

An interesting table gives the nationalities of the miners. Americans constitute only 43 per cent. of the total, Britons nearly 21 per cent., Germans 11½ per cent., whilst the remaining 25 per cent. are made up of French, Italians, Belgians, Austrians, Bohemians, Poles, Hungarians, Russians, Norwegians, Swedes, &c. As has been already pointed out on more than one occasion, such a Babel of tongues is in itself a cause of misunderstandings which may lead to accidents.

OHIO.

In the State of Ohio, which produced 14 million tons of coal, 5¼ millions were mined by machinery, and 8¾ millions by hand. The Inspector of Mines in his Annual Report† devotes a considerable amount of space to a description of the various coal-cutting machines. His volume likewise contains a reprint of the mining laws now in force in the State.

In speaking of falls of roof and coal the Inspector states that this class of accident furnishes "73 per cent. of the fatalities, 62 per cent. of the serious accidents, and 66 per cent. of the minor casualties."

* *Eighteenth Annual Coal Report prepared by the Illinois Bureau of Labor Statistics, 1899, Springfield, Ill., 1899.*

† *Twenty-fourth Annual Report of the Chief Inspector of Mines for the year 1898, Columbus, Ohio, 1899.*

UNITED STATES—continued.

TABLE 500.

PERSONS EMPLOYED at COAL MINES in the various STATES during the Years
1898 and 1899.*

State.	1898.		1899.	
	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.
Alabama...	10,733	609	13,481	563
Arkansas...	2,555	472	2,313	365
California...	314	510	369	436
Colorado...	6,440	633	7,166	667
Georgia...	504	484	567	411
Idaho...	7	148	—	—
Illinois...	35,026	531	36,756	665
Indiana...	8,971	549	9,712	618
Indian Territory...	3,216	430	4,084	376
Iowa...	10,262	450	10,971	472
Kansas...	7,197	473	8,000	482
Kentucky...	7,614	511	7,461	618
Maryland...	4,818	970	4,624	1,040
Michigan...	715	442	1,291	484
Missouri...	6,542	411	7,136	424
Montana...	2,359	627	2,378	629
New Mexico...	1,873	529	1,750	600
North Carolina...	30	383	70	384
North Dakota...	151	556	210	470
Ohio...	26,986	538	26,038	633
Oregon...	199	292	124	701
Pennsylvania	145,504	367	139,608	433
	79,611	819	82,812	895
Tennessee...	6,643	331	6,949	479
Texas...	2,130	322	2,410	367
Utah...	739	803	743	1,058
Virginia...	1,855	979	1,960	1,074
Washington...	3,145	599	3,330	610
West Virginia...	21,607	773	23,625	815
Wyoming...	3,475	824	4,697	817
Total for United States...	401,221	548	410,635	618

* Official Return furnished by the United States Geological Survey, Washington.

UNITED STATES—continued.

TABLE 501.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES,
1898 and 1899.*

Product.	Customary Measures.	1898.			1899.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Non-Metallic.</i>							
Asbestos	Short tons ..	605	549	10,300	681	618	11,740
Asphaltum	" ..	76,337	69,263	675,649	75,085	68,135	553,904
Barytes	" ..	31,306	28,400	108,339	41,894	37,109	139,538
Bauxite	Long tons ..	25,149	25,553	75,437	37,538	38,139	117,408
Borax	Pounds ..	16,000,000	7,268	1,120,000	40,714,000	18,473	1,139,883
Bromine	" ..	496,979	221	126,614	433,004	196	106,251
Building stone	—	—	—	36,607,264	—	—	44,736,576
Cement	Bls., 300 lbs. ..	12,111,208	1,647,783	9,859,501	14,311,407	1,947,130	14,417,658
Clay (brick)	—	—	—	9,000,000	—	—	11,250,000
.. (all other than brick)	—	—	—	1,000,000	—	—	1,250,000
Coal, anthracite†	Long tons ..	47,663,076	48,427,953	75,414,537	53,944,647	54,825,776	88,142,139
.. bituminous	Short tons ..	166,592,023	151,129,844	132,586,313	193,321,987	175,428,300	167,935,304
Cobalt oxide	Pounds ..	7,848	4	11,772	10,230	5	12,512
Corundum and emery	Short tons ..	4,064	3,687	275,064	4,900	4,446	150,609
Feldspar	Long tons ..	12,000	12,192	32,395	30,202	30,695	255,545
Fibrous talc	Short tons ..	54,356	49,311	411,430	54,655	49,597	436,159
Flint	Long tons ..	19,130	19,437	42,670	43,553	44,263	275,345
Fluorspar	Short tons ..	7,675	6,963	63,050	15,900	14,428	96,650
Fuller's earth	" ..	14,880	13,481	106,500	12,381	11,235	79,644
Garnet (abrasive)	" ..	2,967	2,691	86,850	2,765	2,509	96,325
Graphite .. { Crystalline	Pounds ..	2,380,000	1,071	75,200	2,900,732	1,316	167,106
.. { Amorphous	Long tons ..	890	804		2,334	2,363	
Grindstones	—	—	—	489,769	—	—	675,596
Gypsum	Short tons ..	291,638	264,570	755,280	428,661	388,985	1,086,860
Infusorial earth and Tripoli	" ..	2,733	2,479	16,661	4,634	4,205	37,032
Limestone for iron flux	Long tons ..	5,275,819	5,360,483	2,638,000	6,707,435	7,512,327	4,865,205
Magnesite	Short tons ..	1,283	1,146	19,075	1,280	1,162	18,480
Manganese ore	Long tons ..	15,957	16,213	129,185	9,935	1,010	82,278
Marls	Short tons ..	60,000	54,431	30,000	60,000	54,431	30,000
Mica { Sheet	Pounds ..	129,520	59	103,534	108,570	49	70,587
.. { Scrap	Long tons ..	3,999	4,063	27,564	1,505	1,530	30,878
Millstones	—	—	—	25,934	—	—	28,115
Mineral waters { Gallons sold .. .. .	..	28,853,464	—	8,051,833	39,562,136	—	6,948,030
.. { Litres .. .. .	..	121,983,592			167,229,130		
Monazite.. .. .	Pounds ..	250,776	114	13,542	350,000	159	20,000
Natural gas	—	—	—	15,296,813	—	—	20,024,964
Oilstones.. .. .	—	—	—	180,738	—	—	208,283
Paints, mineral	Short tons ..	58,850	53,388	694,856	63,111	57,270	728,399
Petroleum { Bls., 42 gals. .. .. .	..	55,384,233	7,029,109	44,193,359	57,070,850	7,247,092	64,603,904
.. { Litres .. .. .	..	10,562,984,576			10,890,844,951		
Phosphate rock	Long tons ..	1,308,885	1,329,889	3,453,460	1,515,702	1,540,459	5,084,076
Precious stones	—	—	—	180,920	—	—	185,770
Pumice stone	Short tons ..	600	545	13,200	400	363	10,000
Pyrites	Long tons ..	193,364	196,467	593,801	174,734	177,588	543,249
Rutile	Pounds ..	140	—	700	230	—	1,039
Salt	Bls., 280 lbs. ..	17,612,634	2,236,910	6,212,554	20,307,367	2,578,713	10,151,313
Soapstone	Short tons ..	22,231	20,167	287,112	24,765	22,473	330,805
Sulphur	" ..	1,200	1,088	32,960	4,830	4,383	107,500
Zinc, white	" ..	33,000	29,937	2,310,000	40,146	36,430	3,211,680
Total value of non-metals in \$ .. .. .	..	—	—	353,419,765	—	—	450,245,573
Total value of non-metals in £ sterling. .. .. .	..	—	—	£72,720,116	—	—	£92,643,123

* Official Return furnished by the United States Geological Survey, Washington.

† Represents production from Pennsylvania only.

UNITED STATES—continued.

TABLE 503.

PRODUCTION of IRON ORES.*

State.	Red Hematite.	Brown Hematite.	Magnetite.	Carbonate.	Total.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
Michigan	9,008,725	45,375	241,450	—	9,295,550
Minnesota	8,294,595	—	—	—	8,294,595
Alabama	1,942,313	764,127	—	—	2,706,440
Other States	1,085,517	2,107,158	1,514,195	82,891	4,789,761
Total for 1899	20,331,150	2,916,660	1,755,645	82,891	25,086,346
„ 1898	16,414,488	2,022,180	1,258,199	56,278	19,751,145

TABLE 504.

DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1898 and 1899.†

State.	1898.			1899.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Colorado	24	3.23	157,776	41	5.72	105,681
Illinois	75	2.14	224,973	84	2.27	264,011
Indiana	22	2.45	224,153	16	1.65	340,564
Indian Territory‡	17	5.29	77,810	25	6.24	50,963
Iowa‡	26	2.46	153,445	20	2.49	224,497
Kansas	6	0.83	583,684	16	2.00	218,420
Kentucky	6	0.79	535,562	7	0.94	597,091
Maryland	4	0.83	1,048,166	5	1.08	872,240
Missouri	9	1.38	286,080	14	1.96	196,070
New Mexico	7	3.74	111,919	15	8.57	63,546
Ohio	52	1.77	242,256	57	2.19	262,611
Pennsylvania { Anthracite ...	411	2.89	120,929	461	3.30	118,894
	198	2.25	294,366	258	3.12	260,728
Tennessee	20	2.56	139,922	20	2.60	169,468
Utah	3	4.17	203,602	—	—	—
Washington	9	2.86	200,416	42	12.61	43,845
West Virginia	90	4.17	161,381	89	3.77	196,248

Statistics concerning all the fatalities at ore mines are lacking.

There were 24 deaths from accidents,§ equivalent to 3.62 per 1,000 persons employed, at the iron mines of Marquette County (Michigan) during the year ended 30th September 1900, and 27 deaths from accidents,|| equivalent to 2.07 per 1,000 persons employed at the Lake Superior copper mines during the year ended 30th September 1899.

* Return furnished by the United States Geological Survey, Washington.

† Compiled from the Reports of Inspectors of Mines for the various States, and *Eng. Min. Jour.*, Vol. LXIX. 1900, p. 110, and Vol. LXX., 1900, p. 608.

‡ For Fiscal Year ended June 1898 and 1899.

§ *Annual Report of the Inspector of Mines for Year ending 30th September 1900.* Ishpeming, 1900.

|| " " " " " 1899. " 1899.

Uruguay.

The number of persons employed at mines and quarries in the Republic of Uruguay is unknown. Auriferous quartz appears to be the principal mineral worked ; but as the total output is stated to be only 5,120 tons, the mining population cannot be large.

TABLE 505.

QUANTITY and VALUE of GOLD† produced in 1898 and 1899.*

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Kilos.	£	Kilos.	£
Gold	74	7,073	61	5,851 .

Venezuela.‡

According to official statements the country abounds in asphalt, coal, petroleum, salt, and sulphur, as well as in the ores of copper, gold, iron, lead, silver, and tin ; but these rich mineral resources are almost entirely neglected.

Asphalt.—This mineral is beginning to attract attention ; but the quantity exported from Maracaibo in 1899 was only 79 tons.

Gold.—The precious metal is obtained mainly from quartz veins in the Caratal or Nueva Providencia district.

Iron.—It is stated that deposits of iron ore at Imataca, on the Lower Orinoco, will be worked by an American Company ; a trial cargo has already been shipped to the United States.

Salt is a Government monopoly ; the net amount of revenue from this source in 1898 was 1,019,573 bolivares, or £161,517.

TABLE 506.

QUANTITY and VALUE of GOLD exported from Ciudad Bolivar in 1898 and 1899.

1898.		1899.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 1,218	£ 111,068	Kilos. 1,316	£ 120,975

* Return furnished by the "Departamento Nacional de Ingenieros. Seccion Industrial y de Minas," Montevideo.

† Fine Gold 70 %, Fine Silver 30 %.

‡ Acting Consul Andral, "Trade of Caracas and District for the Year 1899." *Dipl. and Cons. Reports*, Nos. 2,466, 1900 [Cd. 1-103], and Consul de Lemos, "Trade of Ciudad Bolivar for the Year 1899." *Dipl. and Cons. Reports*, No. 2,388. Ann. Ser., 1900 [Cd. 1-25].

	Page.		Page.
Anglesey, Copper ore and precipitate ...	146, 185, 186	Asphalt, Output of— <i>cont.</i>	
" Gravel and sand	146, 197	Mexico	398
" Igneous rocks	146, 199	Prussia	381
" Lead ore	226, 228	Russia	411
" Limestone	147, 237	Spain	421
" Ochre	147, 241, 242	Trinidad	352
" Sandstone	147, 252	Turkey	428
" Zinc ore	147, 268, 269	United States	434
" Copper smelters	192	Venezuela	437
" Persons employed	61, 64, 147	Austria, Accidents	286, 287, 344-347
Ankylostomiasis	352	" Mineral output	285, 343, 344
Annam, Mineral output	390	" Persons employed	284, 341, 342
Anthracite, output of :		Ayrshire, Clay	146, 163
United Kingdom	169	" Coal	146
France	368	" Gravel and sand	146, 197
Italy	394	" Igneous rocks	146, 200
Portugal	405	" Iron ore	146, 203, 204
Russia	411	" Limestone... ..	147, 238
Spain	421	" Oil shale	147, 243
United States	434	" Sandstone	147, 252
Antimony, Price in London	152	" Blast furnaces	212, 218
" Smelters and refiners	152	" Coal conveyed by rail	175
Antimony or Antimony ore, Output of :		" Persons employed	55, 58, 61, 64, 147
United Kingdom	152		
Algeria	338		
Austria	343		
Bolivia	356		
Canada	298		
France	368		
Hungary	348		
Italy	394		
Japan	396		
Mexico	398		
New South Wales	322		
Peru	403		
Portugal	405		
Queensland	327		
Serbia	413		
Spain	421		
Turkey	428		
Victoria	333		
United States	435		
Antrim Co., Alum clay	149, 150		
" Chert and flint... ..	148, 161		
" Clay	148, 163		
" Coal	148, 167, 170		
" Igneous rocks	148, 200		
" Iron ore	148, 203, 205, 207		
" Limestone	149, 238		
" Salt	149, 249		
" Sandstone	149, 253		
" Persons employed	56, 58, 61, 65, 149		
Apatite, Output of Norway	401		
Arabia, Mining in	339		
Argentine Republic, Mineral output	285, 339		
Argyll, Coal	146, 167, 170		
" Igneous rocks	146, 200		
" Limestone	147, 238		
" Sandstone	147, 252		
" Slate	147, 256		
" Persons employed	55, 64, 147		
Armagh Co., Gravel and sand	148, 198		
" Igneous rocks	148, 200		
" Limestone	149, 238		
" Persons employed in Quarries	65, 149		
Arsenic or Arsenic ore, Output of :			
United Kingdom	10, 38, 125, 154, 155, 290		
Canada	298		
France	368		
German Empire... ..	375		
Japan	396		
Portugal	405		
Prussia	381		
Turkey	428		
Persons employed	156		
Arsenical pyrites, Output of :			
United Kingdom	10, 38, 125, 153, 154, 290		
Saxony	385		
Spain	421		
Aruba, Mineral Output	365		
Asbestos, Output of :			
Canada	298		
Cape Colony	304		
France	369		
India	314, 317		
Quebec	302		
Russia	411		
United States	431		
Western Australia	336		
Asphalt, Output of :			
Austria	343		
German Empire... ..	375		
Hungary	348		
Italy	394		

	Page.
Bismuth or Bismuth ore, Output of :	
Austria ...	343
Bolivia ...	355
Chili ...	359
German Empire ...	375
Hungary ...	348
New South Wales ...	322
Queensland ...	327
Saxony ...	385
Bituminous shale, Output of :	
France ...	368
Italy ...	394
Black tin (see Tin ore).	
Blasting Fatal accidents in Quarries ...	26, 27, 91, 93-95
Blast furnaces, Particulars of ...	214-219
in operation from 1873 to 1899... ..	219
Blasting gelatine, Accidents with ...	81, 94
Bluestone, Output of Queensland ...	327
Bog ore, Output of Ireland ...	10, 125, 159, 290
Bohemia, Accidents ...	347
Persons employed ...	347
Boiler explosions at Collieries ...	22, 23, 28, 29, 84, 85, 87, 88
Quarries ...	26, 27, 32, 33, 95-97
Bolivia, Mineral output ...	285, 356
Bonaire, Salt workings ...	365
Boracite, Output of :	
German Empire ...	375
Prussia ...	381
Turkey ...	428
Borate of calcium, Output of Chili ...	359
Borax, Output of :	
Chili ...	359
Peru ...	403
United States ...	434
Boric acid, Output of Italy ...	394
Borneo (Dutch), Mineral output ...	363
(see also British North Borneo).	
Bornet's electric percussion boring machine ...	104
Bosnia and Herzegovina, Accidents ...	286, 287, 350
Mineral output ...	285, 350
Persons employed ...	284, 350
Brandon Colliery Explosion ...	66, 72
Brazil, Mineral output ...	285, 357
Breconshire, Coal ...	146, 167, 170
Gravel and sand ...	146, 197
Iron ore ...	146, 203, 204
Lead ore ...	147, 226, 228
Limestone ...	147, 237
Sandstone ...	147, 252
Slate ...	147, 256
Persons employed ...	55, 61, 64, 147
Brick machinery, Accidents with ...	97
Bridgewater Canals, Coal traffic ...	177
Briquettes, Production of, in Hungary ...	348
British Borneo, Output of Minerals ...	285, 293
British Central Africa Protectorate, Minerals ...	294
British Columbia, Accidents ...	286, 287, 299, 300
Mineral output ...	299
Persons employed ...	299
Legislation ...	300
British Guiana, Accidents ...	286, 287, 295
Mineral output ...	285, 294, 295
Persons employed ...	284, 294
British New Guinea, Mineral output ...	285, 295
Persons employed ...	284
British Solomon Islands, Copper ...	296
Broken Hill Lead Mines (New South Wales), Cases of lead poisoning ...	323
Bromine, Production of the United States ...	434
Brown coal (see also Lignite), Output of :	
Algeria ...	338
Austria ...	343
Bavaria ...	380
Bosnia and Herzegovina ...	350
Bulgaria ...	358
France ...	368
German Empire ...	375
Hungary ...	348
Italy ...	394
Prussia ...	381
Russia ...	411
Saxony ...	385
Servia ...	413
Spain ...	421
Victoria ...	383
Brown iron ore, Output of :	
United Kingdom ...	206
United States ...	436
Buckinghamshire, Chalk ...	144, 160
Clay ...	144, 162
Gravel and sand ...	144, 197
Limestone ...	145, 237
Persons employed ...	60, 63, 145

	Page.
Bulgaria, Mineral output ...	285, 358
Burnt cupreous pyrites treated at Metal Extraction Works ...	224
Metals extracted from ...	224
Bute, Gravel and sand ...	146, 197
Igneous rocks ...	146, 200
Sandstone ...	147, 252
Persons employed ...	64, 147
C.	
CAITHNESS, Sandstone ...	147, 252
Slate ...	147, 256
Persons employed ...	64, 147
Caledonian Canal, Coal and coke carried ...	178
Railway ...	175
"Cabook," Output of Ceylon ...	307
Calcium carbide, Output of Ontario ...	301
Calo spar, Output of United Kingdom ...	17, 237
Cambridgeshire, Chalk ...	144, 160
Clay ...	144, 162
Gravel and sand ...	144, 197
Limestone ...	145, 237
Phosphate of lime ...	145, 245
Persons employed ...	63, 145
Canada, Accidents ...	286, 287, 299-302
Mineral output ...	285, 296-302
Persons employed ...	284, 299-302
(see also British Columbia, Nova Scotia, and Ontario).	
Canal, Coal and coke traffic ...	177, 178
Canary Islands, Minerals worked ...	358
Cape Colony, Accidents ...	286, 287, 304-306
Mineral output ...	285, 304
Persons employed ...	234, 303
Carbo-gelatine, Accidents with ...	81
Carbonite, Accidents with ...	81
Cardigan, Clay ...	146, 162
Gravel and sand ...	146, 197
Lead ore ...	147, 226, 228
Sandstone ...	147, 252
Slate ...	147, 256
Zinc ore ...	147, 268, 269
Persons employed ...	61, 64, 147
Carlow Co., Gravel and sand ...	148, 198
Igneous rocks ...	148, 200
Limestone ...	149, 238
Persons employed ...	65, 149
Carmarthenshire, Chert and flint ...	146, 161
Clay ...	146, 162
Coal ...	146, 167, 170
Gravel and sand ...	146, 197
Lead ore ...	147, 226, 228
Limestone ...	147, 237
Sandstone ...	147, 252
Slate ...	147, 256
Zinc ore ...	147, 268, 270
Blast furnaces ...	212, 218
Copper smelters ...	192
Persons employed ...	55, 61, 64, 147
Carnarvonshire, Clay ...	146, 162
Copper ore ...	146, 185, 186
Gravel and sand ...	146, 197
Igneous rocks ...	146, 199
Lead ore ...	147, 226, 228
Limestone ...	147, 237
Sandstone ...	147, 252
Slate ...	147, 256
Zinc ore ...	147, 268, 270
Persons employed ...	61, 64, 147
Cavan Co., Limestone ...	149, 238
Persons employed ...	65, 149
Celebes, Output of Gold ...	364
Celestine (see Strontium sulphate) ...	
Cement, Output of :	
Bavaria ...	380
Canada ...	298
France ...	369
Ontario ...	301
Switzerland ...	426
United States ...	434
Certificates of competency, List of persons to whom granted in 899 ...	106-115
Certificates of Service, do., do. ...	115
Ceylon, Accidents ...	286, 287, 308
Mineral output ...	285, 307
Persons employed ...	284, 307

	Page.
Chalk, Output of:	
United Kingdom	10, 38, 125, 160, 290
Belgium	354
Denmark	362
France	369
Chalk Quarries, Fatal accidents	90, 91, 98
Persons employed	62
Channel Islands, Persons employed	284, 308
Quantity of Stone exported	308
Chert and flint, Output of United Kingdom	10, 38, 125, 161, 290
Cheshire, Clay	144, 162
Coal	144, 166, 170
Gravel and sand	144, 197
Limestone	145, 237
Salt	145, 249
Sandstone	145, 252
Persons employed	55, 60, 63, 145
Coal conveyed by rail	174, 175
Copper Smelters	192
Zinc Smelters	274
Chili, Mineral output	285, 359
Persons employed	284, 359
China, Mineral wealth	360
China clay and stone conveyed by rail and sea	163
Output of Cornwall and Devon	19, 162
France	369
Russia	411
Spain	421
Christmas Island, Phosphate of lime	308
Chrome iron, Production in United Kingdom	213
Chromic iron ore, Output of:	
Bosnia and Herzegovina	350
Canada	298
Greece	387
New Caledonia	400
Newfoundland	321
New South Wales	322
Quebec	302
Russia	411
Turkey	428
Clackmannan, Clay	146, 162
Coal	146, 167, 170
Igneous rocks	146, 200
Sandstone	147, 252
Persons employed	55, 64, 147
Clare Co., Gravel and sand	148, 198
Igneous rocks	148, 200
Sandstone	149, 253
Persons employed	64, 149
Clay, Output of United Kingdom	10, 38, 125, 162, 163, 290
Production of:	
Algeria	338
Belgium	354
Chili	359
France	369
India	314-317
Spain	421
United States	434
Victoria	333
Exports from United Kingdom	164, 165
Quarries, Fatal accidents	90, 91, 98
Persons employed	62
Cleveland iron ore, Output of	202
Coal, Output of United Kingdom	10, 38, 121, 125, 165-168, 285, 290
in each Coal-field	168
County 128, 130, 136, 138, 140, 144, 146, 148, 166 168, 170	
Output of:	
Algeria	285
Annam	390
Austria	285, 343
Bavaria	380
Belgium	285, 353, 354
Borneo, Dutch	363
Bosnia and Herzegovina	285, 350
Brazil	285
British Columbia	299
British Borneo	285, 293
Bulgaria	285
Canada	285, 298
Cape Colony	285, 304
Chili	285, 359
Dutch East Indies	285, 364, 365
France	285, 368
German Empire	285, 375
Holland	285, 389
Hungary	348
Illinois	432, 435
India	285, 314-317
Indo-China	285
Italy	285, 394
Japan	285, 396

	Page.
Coal, Output of—cont.	
Java	364
Mexico	285, 398
Natal	285, 320
Newfoundland	285, 321
New South Wales	285, 322
New Zealand	285, 325
Nova Scotia	300
Ohio	432, 435
Pennsylvania	435
Peru	285, 403
Portugal	285, 405
Prussia	381
Queensland	285, 327
Roumania	285
Russia	285, 411
Saxony	385
Servia	285, 413
South African Republic	285, 417
Spain	285, 421
Sumatra	365
Sweden	285, 424
Switzerland	285
Tasmania	285, 336
Tong-King	285, 390, 391
Turkey	285, 421
United States	285, 429, 439
Victoria	285, 334
Western Australia	285, 336
West Virginia	435
Output per person employed	169, 170
exported from United Kingdom	171, 182, 183, 184
imported into	181
Average price in the several Coal-fields	169
" in the several Counties	166, 167, 170
" in the London market	172
" at the Pit's mouth	166, 167
" at the several Ports	173
Quantity retained for home consumption	171
" per head of population	171
shipped coastwise	179, 180, 184
" for use of steamers	171
conveyed by railway, canal, &c.	174-178
used in the blast furnaces of United Kingdom	212, 214-219
Coal-fields of United Kingdom, List of	52
Fatal accidents	86-88
Mineral output	168, 169
Persons employed	53, 54
Coal-cutting Machines, Quantity of Coal obtained by use of	282
Coal-dust (see Accidents).	
Coal mines, definition	51
Fatal accidents	69
Mineral output from	168, 169
Persons employed at	55
Regulation Act	5
Cobalt and Nickel ores, Output of:	
United Kingdom	39, 194
Chili	359
German Empire	375
Italy	394
New Caledonia	400
New South Wales	322
Norway	401
Prussia	281
Russia	411
Saxony	385
Sweden	434
United States	434
Cochin China, Output of jet	390
Coke exported from United Kingdom	171, 182-184
shipped coastwise	179, 180, 184
Output of:	
British Columbia	299
Canada	298
New South Wales	322
New Zealand	325
Nova Scotia	300
Colombia, Mineral output	285, 361
Colorado, Accidents	436
Persons employed	433
Mineral output	432
Comparative tables, 1873-1898, Persons employed, Mineral output, Deaths from Accidents and Death Rates	36-43
Conglomerate, output of Belgium	354
Congo Free State	361
Copper exported	188-190
imported	191, 192
obtained from British ores	126, 185, 186, 291
Foreign ores	191, 192
Price in the London market	187, 188
Smelters in United Kingdom	192, 193

	Page.
Copper or Copper ore, Output of :	
United Kingdom ...	10, 38, 125, 185-187, 285, 290
Argentine Republic ...	285, 339
Austria ...	285, 343
Bolivia ...	285, 356
Bosnia and Herzegovina ...	285, 350
British Columbia ...	299
Canada ...	285, 298
Cape Colony ...	285, 304
Chili ...	285, 359
Cyprus ...	285, 309
Federated Malay States ...	310
France ...	285, 368
German Empire ...	285, 375
Hungary ...	348
India ...	314, 317
Italy ...	285, 394
Japan ...	285, 396
Mexico ...	285, 398
New Caledonia ...	285, 400
Newfoundland ...	285, 321
New South Wales ...	285, 322
New Zealand ...	285, 325
Norway ...	285, 401
Nova Scotia ...	300
Ontario ...	301
Peru ...	285, 403
Portugal ...	285, 405
Prussia ...	381
Quebec ...	302
Queensland ...	285, 327
Russia ...	285, 411
Servia ...	285, 413
South Australia ...	285, 329
Spain ...	285, 421
Sweden ...	285, 424
Tasmania ...	285, 331
Turkey ...	285, 428
United States ...	285, 435
Western Australia ...	285, 336
Copper precipitate, Production of :	
United Kingdom ...	10, 38, 125, 185-187, 290
Portugal ...	405
Coprolites (see Phosphate of lime)	245
" conveyed by railway ...	246
Corea, Mineral wealth of ...	361
" Output of Gold ...	285
" Persons employed ...	284
Cork, Bandon and South Coast Railway coal and coke traffic ...	176
Cork Co., Barytes ...	148, 157, 158
" Clay ...	148, 163
" Gravel and sand ...	148, 198
" Limestone ...	149, 238
" Sandstone ...	149, 253
" Slate ...	149, 256
" Persons employed ...	56, 61, 67, 149
Cornwall, Arsenic ...	145, 154, 155
" Arsenical pyrites ...	145, 153
" Chert and flint ...	144, 161
" China clay and stone ...	162
" Clay ...	144, 162
" Copper ore ...	144, 185, 186
" Gravel and sand ...	144, 197
" Igneous rocks ...	144, 199
" Limestone ...	145, 237
" Mica ...	145, 240
" Ochre ...	241, 242
" Sandstone ...	145, 252
" Slate ...	145, 256, 257
" Tin ore ...	145, 261-263
" Uranium ore ...	145, 267
" Wolfram ...	145, 267
" Zinc ore ...	145, 268, 269
" Arsenic refiners ...	156
" Tin smelters ...	266
" Persons employed ...	60, 63, 145
Corundum, Output of :	
India ...	314, 316, 317
United States ...	434
Costa Rica, Gold mining ...	362
Cotton powder, Accidents with ...	81, 94
Cotton powder and gunpowder, Accidents with ...	81
County summaries, Output of Mines under the Coal Mines Act ...	128-131
" Output of Mines under the Metalliferous Mines Act ...	132-135
" Output of Quarries ...	136-141
" Output of Shallow workings, Brine wells, &c. ...	142, 143
" Output of all Mines, Quarries, &c. ...	144-149
" Persons employed in Coal Mines ...	55, 56
" " " Iron Mines ...	56-58
" " " Other Mines ...	60, 61

	Page.
County summaries, Output of—cont.	
" Persons employed under the Coal Mines Act ...	129, 131
" employed under the Metalliferous Mines Act ...	133, 135
" employed under the Quarries Act ...	137, 139, 141
County summaries, Persons employed under all three Acts ...	145, 147, 149
" Death-rates ...	89
Courrières Coal Mines Company ...	74-77
Orinan Canal coal and coke traffic ...	178
Crocidolite, Production of Cape Colony ...	304
Cryolite, Output of Greenland ...	362
Cuba, Mineral wealth ...	362
Cumberland, Barytes ...	144, 156, 157
" Clay ...	144, 162
" Coal ...	144, 166, 170
" Gravel and sand ...	144, 197
" Gypsum ...	144, 198
" Igneous rocks ...	144, 199
" Iron ore ...	144, 203, 205, 206
" Lead ore ...	145, 226, 227
" Limestone ...	145, 237
" Sandstone ...	145, 252
" Slate ...	145, 256, 257
" Zinc ore ...	145, 263, 269
" Blast furnaces ...	212, 214
" Coal conveyed by rail ...	174, 175
" Persons employed ...	55, 57, 60, 63, 145
" Zinc smelters ...	274
Cupreous iron pyrites, Output of :	
Canada ...	298
Norway ...	401
Portugal ...	405
Saxony ...	385
Spain ...	421
Cupreous iron pyrites, imported ...	223
" treated at the Metal Extraction Works ...	224
Curaçao, Minerals worked ...	365
Cyprus, Mineral output ...	285, 309

D.

DAHMENTITE, Accidents with ...	81
Deaths from Accidents at Mines in United Kingdom ...	23, 25, 40, 41, 66-89
" at Quarries in United Kingdom ...	27, 90-98
" (see also under Accidents)	
Death-rates in each inspection-district ...	34
" in the several Coal-fields ...	86-88
" in the principal Mining Counties ...	89
" in all Mines ...	66, 67
" in different kinds of Mines ...	69
" Quarries ...	98
" per million tons of mineral raised ...	42, 68, 76
" Mines under the Coal Mines Act ...	34, 42
" Metalliferous Mines Act ...	34, 43
" Quarries under the Quarries Act ...	34
" from different causes of accidents :	
at Coal Mines ...	34
at Quarries ...	34
at Courrières Coal Mines ...	75, 76
" from accidents at Gold Dredging Works :	
New Zealand ...	325
" from accidents at Mines :	
United Kingdom ...	54, 42, 43, 287, 291
Algeria ...	287, 339
Austria ...	287, 344, 345, 347
Belgium ...	287, 355
Bohemia ...	287, 347
Bosnia and Herzegovina ...	287, 350
British Columbia ...	287, 300
British Guiana ...	287, 295
Cape Colony (Kimberley Diamond Mines) ...	287, 305
Ceylon ...	287, 308
Federated Malay States ...	287, 311
France ...	75, 76, 287, 369
German Empire ...	287, 378, 379
Gold Coast ...	287, 312
Greece ...	287, 387
Holland ...	287, 389
Hungary ...	287, 349

	Page.		Page.
Death-rates from accidents at Mines—cont.		Diagram, Deaths per 1,000 persons employed under-	
India	287, 318, 319	ground in the United Kingdom, France,	
Italy	287, 394	and the Courrières Collieries	75
Japan	287, 396	" Deaths per 1,000,000 tons of mineral raised in	
Kimberley... ..	287, 305	the United Kingdom, France, and the	
Mexico	287, 398	Courrières Collieries	76
Natal	287, 320	" Death-rates from Accidents in shafts, 1873-	
New South Wales	287, 323	1899	79
New Zealand	287, 325	" Death-rates from Miscellaneous underground	
Nova Scotia	287, 301	Accidents, 1873-1899	83
Ontario	287, 302	" Output and Export of Coal, 1873-1899	165
Portugal	287, 406	" Output of Iron ore, 1873-1899... ..	202
Prussia	287, 383	" 1870-1899. Luxemburg, France and Germany	
Queensland	287, 327	372, 373	
Russia	287, 412	" Prices of Coal, Copper, Iron, Lead, Tin, and	
Saxony	287, 386	Zinc, 1873-1899	274
Servia	287, 414	" Showing the various stages of the process of	
South African Republic	287, 418	extracting gold at the Rand Mines	116
South Australia	287, 334	Diamonds, Output of:	
Spain	287, 421, 422	Borneo, Dutch	363
Sweden	287, 424	Brazil	357
Switzerland	287, 427	Cape Colony	304
Tasmania	287, 331	India	314, 317
United States	287, 436	New South Wales	322
Victoria	287, 334	Orange Free State	402
Western Australia	287, 336	South African Republic	417
" from accidents at Petroleum Wells:		Diseases of miners in Belgium	352
Austria	345	District statistics of persons employed, Output and	
" from accidents at Quarries:		accidents	6-8
United Kingdom... ..	34, 98, 287, 291	Districts, Mines inspection, List of	44, 45
Algeria	287, 339	Donegal Co., Bog ore	149
British Guiana	287, 295,	" Igneous rocks	148, 200
Ceylon	287, 308	" Limestone	149, 238
France	287, 370	" Sandstone	149, 253
Germany	287	" Persons employed	61, 65, 149
Italy	287, 395	Dorsetshire, Chalk	144, 160
Portugal	287, 406	" Clay	144, 162
Switzerland	287, 427	" Gravel and sand	144, 197
Denmark, Mineral output	362	" Limestone	145, 237
Denbighshire, Clay	146, 162	" Sandstone	145, 252
" Coal	146, 167, 170	" Persons employed	60, 63, 145
" Gravel and sand	146, 197	Down Co., Gravel and sand	148, 198
" Igneous rocks	146, 199	" Igneous rocks	148, 200
" Iron ore	146, 203, 204	" Lead ore	149, 226, 229
" Lead ore	147, 226, 229	" Limestone	149, 238
" Limestone	147, 237	" Sandstone	149, 253
" Sandstone	147, 252	" Persons employed	61, 65, 149
" Slate	147, 256, 257	Dublin Co., Clay	148, 163
" Zinc ore	147, 268, 270	" Gravel and sand	148, 198
" Blast furnaces	212, 218	" Igneous rocks	148, 200
" Persons employed	55, 61, 64, 147	" Limestone	149, 238
" Zinc smelters	274	" Sandstone	149, 253
Derbyshire, Barytes	144, 156, 157	" Persons employed	65, 149
" Chert and flint... ..	144, 161	Dublin, Wicklow, and Wexford Railway Coal and Coke	
" Clay	144, 162	traffic	176
" Coal	144, 166, 170	Dumbarton, Clay	146, 162
" Fluorspar	145, 194	" Coal	146, 167, 170
" Gravel and sand	144, 197	" Gravel and sand	146, 197
" Gypsum... ..	144, 198	" Igneous rocks	146, 200
" Iron ore... ..	144, 203, 204	" Iron ore	146, 203, 204
" Iron pyrites	144, 222	" Limestone	147, 238
" Lead ore	145, 226, 227, 230	" Sandstone	147, 252
" Limestone	145, 237	" Persons employed	55, 61, 64, 147
" Manganese ore	145, 239	Dumfries, Clay	146, 162
" Ochre	145, 241, 242	" Coal	146, 167, 170
" Sandstone	145, 252	" Lead ore	147, 226, 229
" Zinc ore	145, 268, 269	" Limestone	147, 238
" Blast furnaces	212, 214	" Sandstone	147, 252
" Coal conveyed by rail... ..	174, 175	" Zinc ore	147, 268, 270
" Lead smelters	235	" Persons employed	55, 61, 64
" Persons employed	55, 60, 63, 145	Dundalk, Newry, and Greenore Railway Coal and Coke	
Desilverizers in the United Kingdom	235, 236	traffic	176
Detonators, Accidents with	81, 94	Dunee Bay Barytes Mine, Underground fire	82
Devonshire, Arsenic... ..	145, 154, 155	Durham, Barytes	144, 156, 157
" Arsenical pyrites	145, 153, 154	" Clay	144, 162
" Barytes	144, 156	" Coal	144, 166, 170
" Chalk	144, 160	" Fluor spar	145, 194
" Chert and flint	144, 161	" Gravel and sand	144, 197
" Clay	144, 162	" Igneous rocks	144, 199
" Copper ore	144, 185, 186	" Iron ore	144, 203, 205, 206
" Gravel and sand	144, 197	" Lead ore	145, 226, 227
" Igneous rocks	144, 199	" Limestone	145, 237
" Iron ore	144, 203, 205, 206	" Salt... ..	145, 249
" Limestone	145, 237	" Sandstone	145, 252
" Ochre	145, 241, 242	" Zinc ore	145, 268, 269
" Sandstone	145, 252	" Blast furnaces	212, 214
" Slate	145, 256	" Coal conveyed by rail	174, 175
" Tin ore	145, 261, 262	" Copper smelters	193
" Arsenic refiners	145	" Lead smelters	235
" Persons employed	57, 60, 63, 145	" Persons employed	55, 57, 60, 63, 145
Diagram, Mining Accident Death-rates, 1873-1899	66, 67	Dutch East Indies, Mineral output	285, 363-365
" Deaths from different causes of Accident	70	" " Persons employed	284, 363-365
" Death-rates from Accidents from falls of		" Guiana, Output of Gold	285, 365
ground, 1873-1899	74	" West Indies, Mineral output	285, 365
		Dynamite, Accidents	94

E.

	Page.
Ecuador, Output of Gold and Silver	285, 366
Edinburghshire, Clay	146, 162
" Coal	146, 167, 170
" Gravel and sand	146, 197
" Igneous rocks	146, 200
" Iron ore	146, 203, 204
" Limestone	147, 238
" Oil shale	147, 243
" Sandstone	147, 253
" Coal conveyed from, by rail	175
" Persons employed	55, 58, 61, 64, 147
Egypt, Mineral wealth	366
Electric-fuse, Accidents with	82
Electronite, Accidents with	81
Elgin, Igneous rocks	146, 200
" Sandstone	147, 253
" Persons employed	64, 147
Emery, Output of:	
Bavaria	380
Greece	387
Turkey	428
United States	434
England, Summary of mineral output	126
Essex, Chalk	144, 160
" Chert and flint	144, 161
" Clay	144, 162
" Gravel and sand	144, 197
" Persons employed	63, 145
Examinations for Managers' Certificates, List of	
Secretaries to Boards	44, 45
Explosions of fire-damp or coal-dust in the Mines of the	
United Kingdom, Accidents from	22-25, 28-31, 40, 41, 70-72, 87, 88
Explosions of fire-damp or coal-dust in the Mines of	
Prussia	384
Accidents from, classified according to kind	
of Mine and cause	71
(See also under "Accidents.")	
Explosives, Accidents with, at Mines	22 25, 28-31, 80, 82, 87, 88
" " Quarries	26, 27, 32, 33, 94, 95
(See also under "Accidents.")	
in Coal Mines Order, remarks	103
Exports of Clay	164, 165
" Coal, coke, &c.	171, 182-184
" Copper and copper ore	188-190
" Iron ore	210, 211
" Iron and steel	221
" Lead and lead ore	231-233
" Patent fuel	171, 182-184
" Quicksilver	248
" Roofing slates	259, 260
" Salt	251
" Silver bullion and specie	254
" Tin	266
" Zinc and zinc ore	272

F.

Falls of Ground, Accidents from, in Mines	22-25, 28-31, 40-43, 70, 73-78, 87, 88
" " " Quarries	26, 27, 32, 33, 91, 93, 94
" " Home Office Circular	74, 105
" " Remarks by Inspectors	74
(See also under "Accidents.")	
Fatal Accidents (see "Accidents, Fatal")	
Federated Malay States, Accidents	286, 287, 311
" " Mineral output	285, 310
" " Persons employed	284, 309
Felspar, Output of:	
Bavaria	380
Belgium	354
Canada	298
Norway	401
Quebec	302
Sweden	424
United States	434

Page.

Fermanagh Co., Limestone	149, 238
" Persons employed	65, 149
Fife, Clay	146, 162
" Coal	146, 167, 170
" Gravel and Sand	146, 197
" Igneous rocks	146, 200
" Iron ore	146, 203, 204
" Limestone	147, 238
" Sandstone	147, 253
" Blast furnaces	212, 218
" Persons employed	55, 61, 64, 147
Fireclay, Output of:	
United Kingdom	15
Bavaria	380
Canada	298
Cape Colony	304
Chili	359
France	369
New South Wales	322
Sweden	424
Fires underground in Mines, Accidents	22-25, 80, 82, 83
Fire-damp or coal-dust, Accidents from	22, 23, 28-31, 40-43, 71, 72, 87, 88
Flags, Output of:	
Algeria	338
Belgium	354
Canada	298
France	369
Quebec	302
Tunis	428
Flint and chert, Output of:	
United Kingdom	10, 38, 125, 148, 161, 290
Belgium	354
France	369
United States	434
Flintshire, Chert and flint	146, 161
" Clay	146, 162
" Coal	146, 167, 170
" Gravel and sand	146, 197
" Iron ore	146, 203, 205, 207
" Lead ore	147, 226, 229
" Limestone	147, 237
" Oil shale	147, 243
" Sandstone	147, 252
" Zinc ore	147, 268, 270
" Blast furnaces	212, 218
" Lead smelters	235
" Persons employed	55, 58, 61, 64, 147
Fluor spar, Output of:	
United Kingdom	10, 38, 125, 194, 290
Bavaria	380
France	369
Saxony	385
Spain	421
United States	434
Forfar, Clay	146, 162
" Igneous rocks	146, 200
" Sandstone	147, 253
" Persons employed	64, 147
Formosa, Mineral wealth	366
Forth and Clyde Canal Coal and Coke traffic	178
Fossil fuel, Production of Italy	394
Foster, C. Le Neve, Remarks on accidents with	
machinery	97
France, Accidents	286, 287, 369, 370
" Mineral output	285, 368, 369
" Persons employed	284, 367, 368
French Guiana, Mineral output	285, 370
French Soudan, Mineral output	371
Fulminate of mercury, Accidents with	81, 94
Fuller's earth, Output of:	
United Kingdom (see Clay)	162
France	369
Turkey	428
United States	434
Furnaces, Blast, in United Kingdom, particulars of	214-219
Furness Railway, Coal and coke carried by	174

G.

GALENA (see Lead ore)	225
Galway Co., Limestone	149, 238
" Sandstone	149, 253
" Persons employed	65, 149
Ganister (see Sandstone)	252
Garnet, Output of India	314, 317
" United States	434
Gas, Carburetted hydrogen, Output of Italy	394
Gelatine-dynamite, Accidents with	81, 94

	Page.
Gelignite, Accidents with	81, 94
Gelignite and gunpowder, Accidents with	81, 94
Gelignite and oxalate blasting powder, Accidents with	81
General remarks :	
Ambulance classes	104
Explosives in Coal Mines Order	103
Prevention of dust	103, 104
Workmens Compensation Act	104
General Summary of the Mineral Output of :	
United Kingdom for 1898 and 1899	10, 125
British Empire " "	285
Foreign countries " "	285
German East Africa, Mineral deposits	371
German Empire, Accidents... ..	286, 287, 378, 379
" " Mineral output	285, 375-378
" " Persons employed	284, 374, 375
German Mining Commission	74
Gerrard, J., Remarks on the fencing of the tops of Quarries	96
Glamorganshire, Chert and flint	146, 161
" Clay	146, 162
" Coal	146, 167, 170
" Gravel and sand	146, 197
" Iron ore	146, 203, 204
" Limestone	147, 237
" Sandstone	147, 252
" Arsenic refiners	156
" Blast furnaces	212, 218
" Copper smelters	193
" Lead smelters	235
" Persons employed	55, 61, 64, 147
" Zinc smelters	274
Glasgow and South Western Railway, Coal carried	175
Gloucester and Berkeley Canal Coal traffic	177
Gloucestershire, Chert and flint	144, 161
" Clay	144, 162
" Coal	144, 166, 170
" Gravel and sand	144, 197
" Iron ore	144, 203, 205, 206
" Limestone	145, 237
" Ochre	145, 241, 242
" Sandstone	145, 252
" Strontium sulphide	145, 260
" Coal conveyed by rail	174, 175
" Lead smelters	235
" Persons employed	55, 57, 60, 63, 145
" Zinc smelters	274
Gold bullion and specie exported and imported	196
" extracted from foreign cupreous pyrites	196, 224
" extraction from the ore at the Rand Mines, table shewing various stages of	416
" ore, Imported	196
Gold or Gold quartz, Output of :	
United Kingdom	10, 38, 125, 195, 196, 285, 290
Abyssinia	285, 337
Argentina Republic	285, 339
Austria	285, 343
Bolivia	285, 356
Brazil	285, 357
British Borneo	285, 293
British Columbia	285, 299
British Guiana	285, 294, 295
British New Guinea	285, 295
Canada	285, 298
Cape Colony	285, 304
Celebes	364
Chili	285, 359
China	285, 360
Colombia... ..	285, 361
Corea	285, 361
Dutch Borneo	285, 363
Dutch East Indies	285, 363
Dutch Guiana	285, 365
Ecuador	285, 366
Federated Malay States	285, 310
France	285, 368
French Guiana	285, 370
French Soudan	285, 371
German Empire... ..	285, 376
Gold Coast	285, 312
Honduras	285
Hungary	348
India	285, 314, 316, 317
Italy	285, 394
Ivory Coast	395
Japan	285, 396
Madagascar	285, 397
Mexico	285, 398
Natal	285, 320
New Caledonia	285, 400
New South Wales	285, 322
New Zealand	285, 325
Nicaragua	285, 400
Norway	285, 401
Nova Scotia	300

	Page.
Gold or Gold quartz, Output of—cont.	
Ontario	301
Peru	285, 403
Portugal	285, 405
Prussia	381
Quebec	302
Queensland	285, 327
Rhodesia	285, 328
Russia	285, 411
Senegal	285, 412
Siam	285, 414
South African Republic	285, 415, 417
South Australia... ..	285, 329
Spain	285, 421
Sweden	424
Tasmania	285, 331
Turkey	428
United States	285, 435
Uruguay	285, 437
Venezuela	285, 437
Victoria	285, 333
Western Australia	285, 336
Gold Coast, Quantity of Gold exported	312
" Accidents	286, 287, 312
" Persons employed	284, 311
Grand Canal Coal traffic	178
Granite, Output of :	
United Kingdom (included with Igneous Rocks).	
Bavaria	380
British Guiana	294
Canada	298
Ceylon	307
India	314, 317
Newfoundland	321
Queensland	327
Graphite, Output of :	
Austria	343
Bavaria	380
Canada	298
Ceylon	307
German Empire... ..	375
India	314, 316
Italy	394
Japan	396
Mexico	398
Ontario	301
Quebec	302
Spain	421
Sweden	424
United States	434
Gravel and sand, Output of :	
United Kingdom	10, 38, 125, 197, 198, 290
Algeria	338
Belgium	354
Canada	298
France	369
India	314, 316
Great Central Railway, Coal and Coke carried	174
Great Northern Railway, Coal carried	174
" carried " " of Ireland, coal and coke	176
Great Southern and Western Railway Coal and Coke traffic	17
Great Western Railway, Coal and Coke carried... ..	17
Greece, Accidents	38
" Mineral output	285, 38
" Persons employed	284, 38
Greenland, Output of Cryolite	36
" Persons employed	284, 36
Grindstones, Output of :	
Canada	2
Ceylon	30
United States	4
Guatemala, Minerals obtained	3
Gum, Kauri, Production of New Zealand	3
Gun-flints, Production of United Kingdom	1
Gunpowder, Accidents with	81, 82,
Gypsum, Output of :	
United Kingdom	10, 38, 125, 198, 199, 2
Algeria	3
Bavaria	3
Canada	2
Cyprus	3
France	3
Greece	3
India	314, 3
Mexico	3
Nova Scotia	3
Ontario	3
Switzerland	3
United States	3

	Page.
Iron vitriol, Production of :	
German Empire	376
Hungary	348
Japan	396
Prussia	381
Irruptions of water, Accidents	22, 23, 80, 83, 87, 88
Isle of Man, Clay	148, 163
" Gravel and sand	148, 198
" Igneous rocks	148, 200
" Lead ore	149, 226, 229
" Limestone	149, 238
" Sandstone	149, 253
" Slate	149, 256
" Zinc ore	149, 268, 270
" Summary of the Mineral output	127
" Persons employed	59, 61, 65, 149
Isle of Wight (<i>included with Hampshire</i>).	
Italy, Accidents	286, 287, 394, 395
" Mineral output	285, 394
" Persons employed	284, 393
Ivory Coast, Mineral wealth	395

J.

JADE, Production of India	314, 316
Japan, Accidents	286, 287, 396
" Mineral output	285, 396
" Persons employed	284, 396
Java, Mineral output	364
Jet, Output of :	
United Kingdom	225
Cochin China	390
Spain	421
Johore, Mineral deposits	397

K.

KAINITE, Output of :	
German Empire... ..	375
Prussia	381
Kansas, Accidents at Coal Mines	436
" Persons employed	433
Kauri gum, Production of New Zealand	325
Kent, Chalk	144, 160
" Chert and flint	144, 161
" Clay	144, 162
" Gravel and sand	144, 197
" Limestone	145, 237
" Sandstone	145, 252
" Persons employed	55, 60, 63, 145
Kentucky, Accidents at Coal Mines	436
" Persons employed	433
Kerry Co., Limestone	149, 238
" Slate	149, 256
" Persons employed	65, 149
Kildare Co., Limestone	149, 238
" Persons employed	65, 149
Kilkenny Co., Coal	148, 167, 170
" Limestone	149, 238
" Sandstone	149, 253
" Slate	149, 256
" Persons employed	56, 65, 149
Kimberley Diamond Mines, Accidents at	286, 305, 306
" Persons employed at	304
Kincardine, Igneous rocks	146, 200
" Sandstone	147, 253
" Persons employed	64, 147
King's County, Bog ore	149
" Limestone	149, 238
" Persons employed	65, 149
Kinross, Clay	146, 162
" Coal	146, 167, 170
" Igneous rocks	146, 200
" Persons employed	55, 64, 147
Kirkcudbright, Igneous rocks	146, 200
" Persons employed	61, 64, 147
Kynite, Accidents with	81

L.

	Page.
LABASSÈRE SLATE MINE, Methods of working... ..	77
Labuan, Output of coal	293
Lanarkshire, Clay	146, 163
" Coal	146, 167, 170
" Gravel and sand	146, 197
" Igneous rocks	146, 200
" Iron ore	146, 203, 204
" Lead ore	147, 226, 229
" Limestone	147, 238
" Oil shale	147, 243
" Sandstone	147, 253
" Blast furnaces	212, 219
" Coal conveyed by rail	175
" Zinc smelters	274
" Persons employed	55, 61, 64, 147
Lancashire, Clay	144, 162
" Coal	144, 166, 170
" Copper ore	144, 185, 186
" Gravel and sand	144, 197
" Igneous rocks	144, 199
" Iron ore	144, 203, 205, 207
" Iron pyrites	144, 222
" Limestone	145, 237
" Rock salt	145, 249
" Salt from brine	145, 249
" Sandstone	145, 252
" Slate	145, 256, 257
" Blast furnaces	212, 215
" Coal conveyed by rail	174, 175
" Copper smelters	193
" Lead smelters	235
" Persons employed	55, 57, 60, 63, 145
" Zinc smelters	274
Lancashire and Cheshire Coal-fields, Counties	52
" " " Fatal Accidents	86-88
" " " Output of Mineral	168, 169
" " " Persons employed	53, 54
Lancashire and Yorkshire Railway, Coal and Coke	
" carried	174
Laterite, Output of India	314-317
Lead obtainable from British ores	125, 226-230, 291
" " imported foreign ores	234
" Prices of, in the London market	230, 231
" Quantity available for home consumption	234
" Smelters in United Kingdom	235, 236
Lead and lead ore, Exported	231-233
" Imported	233, 234
Lead and lead ore, Output of :	
United Kingdom	10, 39, 125, 149, 226-230, 285, 290
Algeria	285, 338
Austria	285, 343
Belgium	285, 354
Bolivia	285, 356
British Columbia	299
Canada	285, 298
Chili	285, 359
France	285, 368
German Empire	285, 375
Greece	285, 387
Hungary	348
Italy	285, 394
Japan	285, 396
Mexico	285, 398
New Caledonia	400
New South Wales	285, 322
Peru	285, 403
Portugal	285, 405
Prussia	381
Quebec	302
Queensland	285, 327
Russia	285, 411
Servia	285, 413
South African Republic	417
South Australia	285, 329
Spain	285, 421
Sweden	285, 424
Tasmania	285, 330
Tunis	285, 428
United States	285, 435
Western Australia	285, 336
Lead poisoning cases at Broken Hill Mines (New South Wales)	323
Leeds and Liverpool Canal Co. Coal traffic	177
Leeward Islands (<i>see Redonda and Sombbrero</i>).	

	Page.
Legislation relating to Mines in :	
Barbados	242
British Columbia	300
Dutch East Indies	363
New South Wales	322
New Zealand	325
Western Australia	335
Leicestershire, Clay	144, 162
" Coal	144, 166, 170
" Gravel and sand	144, 197
" Igneous rocks	144, 199
" Iron ore	144, 203, 208
" Limestone	145, 237
" Slate	145, 256
" Blast furnaces	212, 215
" Coal conveyed by rail	174, 175
" Persons employed	55, 60, 63, 145
Leitrim Co., Coal	148, 167, 170
" Sandstone	149, 253
" Persons employed	56, 65, 149
Lignite (<i>see also Brown coal</i>), Output of :	
United Kingdom	236
Bulgaria	358
France	369
Greece	387
Portugal	405
Roumania	408
Russia	411
Servia	413
Victoria	333
Limerick Co., Igneous rocks	148, 200
" Limestone	149, 238
" Sandstone	149, 253
" Persons employed	65, 149
Lime or limestone, Output of :	
United Kingdom	10, 39, 125, 237, 238, 290
Algeria	338
Bavaria	380
Belgium	354
Canada	298
Chili	359
France	369
India	314-317
New South Wales	322
Nova Scotia	300
Ontario	301
Queensland	327
Saxony	385
Switzerland	426
Tunis	428
United States	434
Western Australia	336
Limestone Quarries, Accidents	90, 91, 98
" Persons employed	62
Lincolnshire Chalk	144, 160
" Clay	144, 162
" Gravel and sand	144, 197
" Iron ore	144, 203, 204, 208
" Limestone	145, 237
" Sandstone	145, 252
" Blast furnaces	212, 215
" Coal conveyed by rail	174
" Persons employed	57, 63, 145
Linlithgowshire, Clay	146, 162
" Coal	146, 167, 170
" Gravel and sand	146, 197
" Igneous rocks	146, 200
" Iron ore	146, 203, 204
" Limestone	147, 238
" Oil shale	147, 243
" Sandstone	147, 253
" Coal conveyed by rail	175
" Persons employed	53, 61, 64, 147
Lithographic stone, Output of :	
Bavaria	380
France	369
Lleest Colliery Explosion	66, 70, 72
London and North Western Railway, Coal carried	174
Londonderry Co., Igneous rocks	148, 200
" Limestone	149, 238
" Sandstone	149, 253
" Persons employed	65, 149
Longford Co., Gravel and sand	148, 198
" Limestone	149, 238
" Persons employed	65, 149
Louth Co., Gravel and sand	148, 198
" Igneous rocks	148, 200
" Limestone	149, 238
" Persons employed	65, 149
Luxemburg (G. Duchy) Mineral output... ..	285, 386, 397
" Persons employed	284, 388

M

					Page.
Machine mining in the United States	...	...	...	...	430
MACHINERY, Accidents by, at Mines	...	22-25,	28-31,	80,	83, 84, 87, 88,
"	"	Quarries	...	26, 27, 32,	33, 92, 95, 96
"	"	"	Remarks by Dr.	Foster	...
Madagascar, Mineral wealth of	...	...	...	...	397
Magnesite, Production of :					
Greece	...	...	...	...	387
United States	...	...	...	...	434
Magnesium carbonate, Output of France...	...	...	...	...	369
"	chloride, Production of :				
	German Empire	...	...	...	376
	Prussia	...	...	...	382
"	salts, Production of :				
	German Empire	...	...	...	375
	Prussia	...	...	...	381
"	sulphate, Production of :				
	German Empire	...	...	...	376
	Prussia	...	...	...	382
Malay States (<i>see</i> Federated Malay States).					
Malta, Minerals obtained in	...	...	...	...	319
Manganese ore, Imported	...	...	...	...	240
"	"	Output of :			
	United Kingdom	...	...	10, 39, 125,	239, 290
	Austria	...	...	...	343
	Belgium	...	...	...	354
	Bosnia and Herzegovina	...	...	...	350
	Brazil	...	...	...	357
	Canada	...	...	...	298
	Chili	...	...	...	359
	Colombia	...	...	...	361
	Dutch East Indies	...	...	...	364
	France	...	...	...	368
	German Empire	...	...	...	376
	Greece	...	...	...	387
	Hungary	...	...	...	348
	India	...	...	...	314, 316
	Italy	...	...	...	394
	Japan	...	...	...	396
	Java	...	...	...	364
	New South Wales	...	...	...	322
	New Zealand	...	...	...	325
	Nova Scotia	...	...	...	300
	Portugal	...	...	...	405
	Prussia	...	...	...	381
	Queensland	...	...	...	327
	Russia	...	...	...	411
	Saxony	...	...	...	385
	Spain	...	...	...	421
	Sweden	...	...	...	424
	Turkey	...	...	...	428
	United States	...	...	...	434
Manjak, Output of Barbados	...	...	...	...	292
Map of British Isles, shewing Inspection districts	...	46,	47		
Marble, Output of :					
Algeria	...	...	...	...	338
Belgium	...	...	...	...	354
France	...	...	...	...	369
Italy	...	...	...	...	392
Mexico	...	...	...	...	398
Tunis	...	...	...	...	428
Turkey	...	...	...	...	428
Marl, Output of :					
United Kingdom (<i>included with "Clay"</i>).					
Bavaria	...	...	...	...	380
Belgium	...	...	...	...	354
France	...	...	...	...	369
United States	...	...	...	...	434
Martin, J. S., Remarks on the use of guides in sinking pits	...	...	...	...	78
"	Explosives used in his District	...	...	...	82
Maryland, Accidents at Coal Mines	...	...	...	...	436
"	Persons employed	...	...	...	433
Maryport and Carlisle Railway Coal and Coke traffic	...	...	...	...	175
Matches or smoking, Explosions of fire-damp caused by	...	...	...	...	71
Mayo Co., Limestone	...	...	...	...	149, 238
"	Persons employed	...	...	...	65, 149
Meath Co., Gravel and sand	...	...	...	...	148, 198
"	Igneous rocks	...	...	...	148, 200
"	Limestone	...	...	...	149, 238
"	Persons employed	...	...	...	65, 149
Meerschaum, Output of Turkey	...	...	...	...	428
Melaphyre, Output of Bavaria	...	...	...	...	380
Mercury (<i>see</i> Quicksilver).					

	Page.
Merionethshire, Clay...	146, 162
" Copper ore...	146, 185, 186
" Gold ...	147, 195
" Gravel and sand ...	146, 197
" Igneous rocks ...	146, 199
" Limestone ...	147, 237
" Manganese ore ...	147, 240
" Sandstone ...	147, 252
" Slate ...	147, 256, 258
" Persons employed ...	61, 64, 147
Mexico, Accidents ...	286, 287, 398
" Mineral output ...	285, 398
" Persons employed ...	284, 398
Mica, Output of:	
United Kingdom ...	10, 125, 240, 290
Canada ...	298
Ceylon ...	307
India ...	314-317
Newfoundland ...	321
Ontario ...	301
Quebec ...	302
Saxony ...	385
South Australia... ..	329
United States ...	434
Western Australia ...	336
Michigan, Accidents at Ore Mines...	436
" Persons employed ...	433
Middlesex, Chalk ...	144, 160
" Chert and flint ...	144, 161
" Clay ...	144, 162
" Gravel and sand ...	144, 197
" Persons employed in ...	63, 145
" Lead smelters ...	235
Midland coal-fields, Counties ...	52
" " Fatal accidents ...	86-88
" " Output of Minerals ...	168, 169
" " Persons employed ...	53, 54
Midland Great Western Railway Coal and Coke traffic	176
Midland Railway Coal and Coke traffic ...	175
Mill gearing, and the management of Belts ...	84
Millstones, Output of:	
Belgium ...	354
France ...	369
Greece ...	387
Servia ...	413
United States ...	434
Mineral oil (<i>see</i> Petroleum).	
Mineral output of the several Coal-fields...	168, 169
" " per person employed ...	169
Mineral output of:	
United Kingdom, summary ...	10, 125
British Empire, summary ...	285, 290
Foreign Countries, summary ...	285
Mines in each county ...	128-135
Quarries in each county ...	136-141
Shallow workings, &c., in each county ...	142, 143
Mineral output, County summary, all Mines, Quarries, &c. ...	144-149
Mineral paints, Output of United States ...	434
Mineral waters, Output of:	
Canada ...	298
Italy ...	394
Spain ...	421
United States ...	434
Mine, Definition of ...	5
Mines and Quarries, Inspection districts ...	44, 45
Miscellaneous fatal accidents at Mines 22-25, 40, 41, 70, 83, 87, 88	
" " Quarries 26, 27, 92, 93, 95-97	
" non-fatal accidents at Mines ...	28-31
" " Quarries ...	32, 33
Missouri, Accidents at Coal Mines ...	436
" Persons employed ...	433
Molybdenite, Output of Norway ...	401
Monaghan Co., Gravel and sand ...	148, 198
" Limestone ...	149, 238
" Persons employed ...	65, 149
Monazite, Output of:	
Brazil ...	357
United States ...	434
Monkland Canal Coal and Coke traffic ...	178
Monmouthshire, Clay ...	144, 162
" Coal ...	144, 166, 170
" Iron ore ...	144, 203, 204
" Limestone... ..	145, 237
" Sandstone ...	145, 252
" Blast furnaces ...	212, 215
" Coal conveyed by rail ...	174, 175
" Persons employed ...	55, 63

	Page.
Montgomeryshire, Barytes ...	146, 157, 158
" Clay ...	146, 162
" Copper ore ...	146, 185, 186
" Igneous rocks ...	146, 199
" Lead ore... ..	147, 226, 229
" Limestone ...	147, 237
" Sandstone ...	147, 252
" Slate ...	147, 256, 259
" Zinc ore... ..	147, 268, 270
" Persons employed ...	61, 64, 147
Morocco, Mineral workings of ...	399
Mosaic stone, Output of France ...	369

N.

NAIEN, Igneous rocks ...	146, 200
" Sandstone ...	147, 253
" Persons employed ...	64, 147
Naked lights, Explosions of fire-damp caused by ...	72
Naphtha (<i>see</i> Petroleum).	
Natal, Accidents ...	286, 287, 320
" Mineral output ...	285, 320
" Persons employed ...	284, 319
Natural gas, Output of:	
Canada ...	298
Ontario ...	301
United States ...	434
Nagri Sembilan, Output of Tin ...	310
" Wolfram exported ...	310
New Caledonia, Mineral output ...	285, 400
" Persons employed ...	284, 399
Newfoundland, Mineral output of... ..	285, 321
New Guinea (<i>see</i> British New Guinea).	
New Mexico, Accidents at Coal Mines ...	436
" Persons employed ...	433
New South Wales, Accidents ...	286, 287, 323
" Mineral output ...	285, 322
" Persons employed ...	284, 322
New Zealand, Accidents ...	286, 287, 325
" Mineral output ...	285, 325
" Persons employed ...	284, 324
Nicaragua, Output of Gold ...	285, 400
Nickel, Quantity obtainable from British ore ...	291
Nickel or nickel ore, Output of:	
United Kingdom ...	39, 184, 241
Canada ...	298
Chili ...	359
German Empire... ..	375
Italy ...	394
New Caledonia ...	400
Ontario ...	301
Prussia ...	381
Saxony ...	385
United States ...	435
Nigeria, Mineral wealth ...	326
Nitrate of ammonia compounds, Accidents ...	81, 94
Nitrate of soda, Output of Chili ...	359
Nitro-cellulose compound, Accidents ...	81, 94
Nitro-glycerine compounds, Accidents ...	81, 94
Non-fatal accidents at Mines in United Kingdom	28-31
Quarries ...	32, 33
Norfolk, Chalk ...	144, 160
" Chert and flint ...	144, 161
" Clay ...	144, 162
" Gravel and sand ...	144, 197
" Limestone ...	145, 237
" Sandstone ...	145, 252
" Persons employed ...	63, 145
Northamptonshire, Clay ...	144, 162
" Gravel and sand ...	144, 197
" Iron ore ...	144, 203, 208
" Limestone ...	145, 237
" Sandstone ...	145, 252
" Blast furnaces ...	212, 215
" Persons employed ...	60, 63, 145
North Borneo... ..	293
North British Railway, Coal and Coke traffic ...	176
North Eastern Railway, Coal and Coke traffic ...	175
Northern Coal-field, Counties ...	52
" Fatal accidents ...	86-88
" Output of Mineral ...	168, 169
" Persons employed ...	53, 54
North Staffordshire Railway, Coal and Coke traffic ...	175

	Page.
Northumberland, Barytes	144, 156, 157
" Clay	144, 162
" Coal	144, 166, 170
" Gravel and sand	144, 197
" Igneous rocks	144, 199
" Lead ore	145, 226, 227
" Limestone	145, 237
" Sandstone	145, 252
" Zinc ore	145, 268, 269
" Blast furnaces	212, 216
" Coal conveyed by rail	175
" Copper smelters	193
" Lead smelters	235
" Persons employed	55, 60, 63, 145
North Wales Coal-field, Counties	52
" Fatal accidents	86-88
" Output of Mineral	168, 169
" Persons employed	53, 54
Norway, Mineral output	285, 401
" Persons employed	284, 401
Nottinghamshire, Clay	144, 162
" Coal	144, 166, 170
" Gravel and sand	144, 197
" Gypsum	144, 198
" Iron ore	144, 203, 208
" Iron pyrites	144, 222
" Limestone	145, 237
" Sandstone	145, 252
" Blast furnaces	212, 216
" Coal conveyed by rail	174, 175
" Copper smelters	193
" Persons employed	55, 60, 63, 145
Nova Scotia, Accidents	286, 287, 301
" Mineral output	300
" Persons employed	300

O.

OCHRE AND UMBER, Output of :	
United Kingdom	10, 39, 125, 241-243, 290
Bavaria	380
Belgium	354
Canada	298
Cyprus	309
France	369
Quebec	302
Saxony	385
Spain	421
Ohio, Accidents at Coal Mines	432, 436
" Persons employed	433
Oil shale, Output of :	
United Kingdom	10, 39, 125, 243, 244, 290
New South Wales	322
Oil stones, Output of United States	434
Onyx, Output of :	
Algeria	338
France	369
Ontario, Accidents	286, 287, 302
" Mineral output	301
" Persons employed	301
Opal, Output of :	
New South Wales	322
Queensland	327
Orange Free State Diamond Mines and Coal-field	402
Orkney, Sandstone	147, 253
" Persons employed	64, 147
Output of Minerals from Mines in each inspection district under the Coal Mines Act	14, 15
Output of Minerals from Mines in each inspection district under the Metalliferous Mines Act	16, 17
Output of Minerals from Quarries in each inspection district under the Quarries Act	18, 19
Output of Minerals from certain shallow workings	20, 21
Output of Minerals from each county under the Coal Mines Act	128-131
Output of Minerals from each county under the Metalliferous Mines Act	132-135
Output of Minerals from each county under the Quarries Act	136-141
Output of Minerals from shallow workings, brine wells, &c.	142, 143

	Page.
Output of Minerals from the several Coal-fields	168, 169
" from Mines, 1873 to 1899	37
" from Mines and Quarries, 1873 to 1899	38, 39
" in United Kingdom, General Summary	10, 123, 125
" in British Colonies	285
" in Foreign Countries	285
" (see also under each Colony and Country, and under each Mineral).	
Overwinding, Accidents from	22, 28, 79, 87, 88
Oxalate blasting powder, Accidents with	81
Oxfordshire, Chalk	144, 160
" Chert and flint	144, 161
" Clay	144, 162
" Gravel and sand	144, 197
" Iron ore	144, 203, 208
" Limestone	145, 237
" Sandstone	145, 252
" Persons employed	60, 63, 145
Ozokerite, Output of Austria	314

P.

PAHANG, Mineral output	310
Paraguay, Mineral deposits of	402
Patent fuel, Exported	171, 182-184
" Shipped coastwise	179, 180, 184
Paving stone, Output of :	
Bavaria	380
Belgium	354
France	369
Peat, Output of :	
France	368
Holland	388
Italy	394
Russia	499
Sweden	423
Pebbles, Coal	146, 167, 170
" Igneous rocks	146, 200
" Limestone	147, 238
" Sandstone	147, 253
" Persons employed	55, 64, 147
Pembroke, Coal and anthracite	146, 167, 170
" Igneous rocks	146, 199
" Limestone	147, 237
" Sandstone	147, 252
" Slate	147, 256
" Persons employed	55, 64, 147
Perak, Mineral output	310
Persia, Minerals obtained in	402
Pennsylvania, Accidents	436
" Output of Coal	435
" Persons employed	433
Persons employed in inspection districts under the Coal Mines Act	11
Persons employed in inspection districts under the Metalliferous Mines Act	12
Persons employed in inspection districts under the Quarries Act	13
Persons employed in each county under the Coal Mines Act	129, 131
Persons employed in each county under the Metalliferous Mines Act	133, 135
Persons employed in each county under the Quarries Act	63-65, 137, 139, 141
Persons employed in the several Coal-fields	53, 54, 86
" at Coal Mines	52, 53, 55, 56
" Iron Mines	52, 56-58
" "other" Mines	52, 58-61
" different kinds of Quarries	62
" Mines, 1873 to 1899	36
" Mines and Quarries in United Kingdom, Summary	9, 284, 289
" Mines and Quarries in British Colonies, Summary of	284
Persons employed at Mines and Quarries in Foreign Countries, Summary of	284
Persons employed in Mining in :	
Algeria	284, 337
Austria	284, 341, 342
Bahamas	284, 292
Banca	363
Barbados	284
Bavaria	379
Belgium	284, 351, 353
Billiton	363

	Page.		Page.
Persons employed in Mining in—cont.		Petroleum, Output of—cont.	
Bohemia ...	347	Hungary ...	348
Bosnia and Herzegovina ...	284, 350	India ...	285, 314-317
British Columbia ...	299	Italy ...	285, 394
British Guiana ...	284, 294	Japan ...	285, 396
British New Guinea ...	284	Ontario ...	301
Canada ...	284, 299-302	Peru ...	285, 403
Cape Colony ...	284, 308	Prussia ...	381
Ceylon ...	284, 307	Roumania ...	285, 408
Channel Islands ...	284, 308	Russia ...	285, 411
Chili ...	284	Sumatra ...	365
Corea ...	284	United States ...	285, 434
Dutch East Indies ...	284, 363-365	Philippine Islands, Mineral deposits ...	404
Federated Malay States ...	284, 309	Phosphate of alumina, Output of Redonda ...	328
France ...	284, 367, 368	Phosphate of lime, Conveyed by railway ...	246
German Empire ...	284, 374, 375	" " Imported ...	246
Gold Coast ...	284, 311	" " Output of :	
Greece ...	284, 387	United Kingdom ...	10, 39, 125, 245
Greenland ...	284, 362		246, 290
Holland ...	284, 349	Algeria ...	338
Hungary ...	348	Aruba ...	365
India ...	284, 313	Belgium ...	354
Italy ...	284, 393	Canada ...	298
Japan ...	284, 396	Chili ...	359
Kimberley ...	304	Dutch West Indies ...	365
Luxemburg ...	284, 386	France ...	369
Mexico ...	284, 398	French Guiana ...	370
Natal ...	284, 319	Norway ...	401
New Caledonia ...	284, 399	Quebec ...	302
New South Wales ...	284, 323	Russia ...	411
New Zealand ...	284, 324	Spain ...	421
Norway ...	284, 401	Tunis ...	428
Nova Scotia ...	300	United States ...	434
Ontario ...	301		
Peru ...	284, 402	Pig iron (<i>see</i> Iron, Pig).	
Portugal ...	284, 405	Platinum, Output of :	
Prussia ...	380	Canada ...	294
Quebec ...	302	New South Wales ...	322
Queensland ...	284, 326	Russia ...	411
Redonda ...	284, 328	United States ...	435
Russia ...	284, 410	Plumbago (<i>see</i> Graphite).	
Saxony ...	386	Point of Ayr Colliery Explosion ...	72
Servia ...	284, 413	Porcelain earth, Output of Bavaria ...	380
Siam ...	284, 414	Porphyry, Output of Queensland ...	327
Singkep ...	364	Porto Rico, Mineral deposits ...	404
South African Republic ...	284, 417	Portugal, Accidents ...	286, 287, 406
South Australia ...	284, 329	" Mineral output ...	285, 405
Spain ...	284, 420	" Persons employed ...	284, 405
Sumatra ...	365	Portuguese East Africa, Minerals ...	406
Sweden ...	284, 423	" Nyassaland, Minerals ...	406
Switzerland ...	284, 425, 426	Potassium salts, Output of :	
Tasmania ...	284, 330	German Empire ...	375
United States ...	284, 433	Prussia ...	381
Victoria ...	284, 333	Potter's clay, Exported ...	164
Western Australia ...	284, 335	" Output of :	
Persons employed at Petroleum Wells :		United Kingdom ...	162
Austria ...	342	France ...	369
Russia ...	410	Tunis ...	428
Persons employed at Quarries :		Pozzolana, Output of Switzerland ...	426
Algeria ...	337	Precious stones, Output of :	
Belgium ...	351	Cape Colony ...	303, 304
British Guiana ...	294	Ceylon ...	307
Ceylon ...	307	France ...	369
Channel Islands ...	308	India ...	314
France ...	368	Mexico ...	398
Italy ...	393	New South Wales ...	322
Peru ...	402	Queensland ...	327
Portugal ...	405	Siam ...	414
Sweden ...	423	United States ...	434
Switzerland ...	425, 426	Prevention of dust, remarks ...	103, 104
Persons employed at Salt Works :		Prices of sea-borne Coal in the London market ...	172
Austria ...	342	" Coal at the pit's mouth ...	166, 167
Bosnia and Herzegovina ...	350	" " at various shipping ports ...	173
German Empire ...	375	" " Diagram shewing fluctuations from 1873	
Italy ...	393	to 1899 ...	274
Russia ...	410	" Pig iron at the works ...	220, 221
Persons employed at Turbaries :		" Antimony in London market ...	152
Holland ...	388	" Copper " " ...	187, 188
Italy ...	393	" Lead " " ...	230, 231
Perthshire, Coal ...	146, 167, 170	" Standard silver " " ...	255
" Igneous rocks ...	146, 200	" Tin " " ...	264
" Limestone ...	147, 238	" Zinc " " ...	273
" Sandstone ...	147, 253	" Cleveland Pig, Copper, Lead, Tin, and Zinc ;	
" Slate ...	147, 256	Diagram shewing fluctuations from 1873	
" Persons employed ...	55, 64, 147	to 1899 ...	274
Peru, Mineral output ...	285, 403	Props and timbering, Home Office Circular ...	105
" Persons employed ...	284, 402	Prosecutions under the Mines Act ...	99-101
Petroleum, Imported ...	245	" " Quarries Act ...	101
Petroleum, Output of :		" " Factory and Workshop Acts ...	102
United Kingdom ...	10, 125, 244, 285, 290	Prussia, Accidents ...	382-384
Austria ...	285, 344	" Mineral output ...	381, 382
Bavaria ...	380	" Persons employed ...	380
Canada ...	285, 298	Pumice, Output of :	
Dutch East Indies ...	285, 363, 364	Mexico ...	398
German Empire ...	285, 375	United States ...	434
		Pyrites (<i>see</i> Iron pyrites).	

	Page.		Page.
Sandstone, Output of :		United States	285, 435
United Kingdom	10, 39, 125, 149, 290	Uruguay	285, 437
Bavaria	380	Silver lead ore, Output of :	
India	314-317	United Kingdom	226-229
Queensland	327	Algeria	338
Sandstone Quarries, Accidents	90, 91, 98	Bolivia	356
" Persons employed	62	Chili	359
Sandwich Islands, Mineral Deposits	412	France	368
Sarawak, Mineral resources	293	Greece	387
Saxony, Accidents	386	Hungary	348
" Mineral output	385	New Caledonia	400
" Persons employed	385	New South Wales	322
Sootch Coal-fields, Counties	52	South African Republic	417
" Fatal Accidents	86-88	South Australia	329
" Output of minerals	168, 169	Spain	421
" Persons employed	53, 54	Sweden	424
Sootland, Summary of Mineral output	127	Tasmania	331
" Copper smelters	193	Victoria	333
" Lead smelters	236	Singkep, Output of Tin	364
" Railway traffic of Coal and coke	175, 176	" Persons employed	364
Selangor, Mineral output	310	Slate Mines, Methods of working	77
Selkirk, Igneous rocks	146, 200	" Accidents	83
" Persons employed	64, 147	Slate, Output of :	
Senegal, Gold exported	412	United Kingdom	10, 39, 125, 256-259, 290
Servia, Accidents	414	Bavaria	380
" Mineral output	285, 413	Belgium	354
" Persons employed	284, 413	Canada	298
Severn Navigation Coal traffic	177	France	369
Shafts, Accidents in	22-25, 28-31, 40-43, 70, 78, 79, 87, 88	India	314-317
Remarks by Mr. J. S. Martin	78	Newfoundland	321
Shale (see Oil shale).		Quebec	302
Shetland, Sandstone...	147, 253	Slate Quarries, Accidents	90, 91, 98
" Persons employed	64, 147	" Persons employed	62
Shipments of China clay, and stone	163, 164	Slates, roofing, Exported	259, 260
" Coal, coke, &c. coastwise	179, 180	Sligo Co., Limestone...	149, 238
Shot-firing, Accidents caused by, in Mines	71, 82	" Persons employed	61, 66, 149
" Quarries	94	Sligo, Leitrim and Northern Counties Railway Coal and	
Shropshire, Barytes	144, 156, 158	Coke traffic	176
" Clay	144, 162	Small detached coalfields, Counties	52
" Coal	144, 166, 170	" Fatal accidents	86-88
" Gravel and sand	144, 197	" Output of minerals	168, 169
" Igneous rocks	144, 199	" Persons employed	53, 54
" Iron ore... ..	144, 203, 204	Smelters, Antimony	152
" Iron pyrites	144, 222	" Copper	192, 193
" Lead ore	145, 226, 227	" Lead	235, 236
" Limestone	145, 237	" Tin	266
" Sandstone	145, 252	" Zinc... ..	274
" Zinc ore... ..	145, 268, 269	Soapstone, Output of :	
" Blast furnaces	212, 216	United Kingdom	260
" Coal conveyed by rail... ..	174, 175	Bavaria	380
" Persons employed	55, 57, 60, 63, 145	Canada	298
Shropshire Union Canal Coal traffic	177	France	369
Siam, Mineral output	285, 414	India	314-317
" Persons employed	284, 414	Spain	421
Silicon iron	213	United States	434
Silver bullion and specie, Imported and exported, Value		Soda (see Nitrate of soda).	
of	254	Sodium, Production in United Kingdom...	125, 260, 291
" extractors and refiners (see Copper and Lead		Sodium sulphate, Output of :	
smelters)	192, 193, 235, 236	German Empire	376
" extracted from imported Pyrites	224, 253	Prussia	382
" obtainable from British Lead ore	125, 226-230, 253	Russia	411
" Prices of standard, in London market	255	Somali Coast Protectorate, Mineral deposits	414
" ore, Imported	254	Sombroso	328
Silver or silver ore, Output of :		Somersetshire, Chalk	144, 160
United Kingdom	125, 253, 285	" Clay	144
Abyssinia	285, 337	" Coal	144, 166, 170
Algeria	285	" Fuller's earth	162
Argentine Republic	285, 339	" Gravel and sand	144, 197
Austria	285, 343	" Gypsum	144, 198
Bolivia	285, 356	" Iron ore	144, 203, 208
British Columbia	285, 299	" Lead ore	145, 226
Canada	285, 298	" Limestone	145, 237
Chili	285, 359	" Ochre	145, 241, 242
Colombia	285, 361	" Sandstone	145, 252
Ecuador	285, 366	" Slate	145, 256
German Empire	285, 376	" Sulphate of strontia	145, 260
Honduras	285	" Coal conveyed by rail	174, 175
Hungary	348	" Lead smelters	235
Italy	285, 394	" Persons employed	55, 60, 63, 145
Japan	285, 396	Soudan, Mineral wealth	366
Mexico	285, 398	South African Republic, Accidents	286, 418, 419
New South Wales	285, 322	" Mineral output	285, 417, 418
New Zealand	285, 325	" Persons employed	284, 417
Norway	285, 401	Southam Iron Ore Mine, Underground fire	82
Ontario	301	South Australia, Accidents	286, 287, 330
Peru	285, 403	" Mineral output	285, 329
Portugal	405	" Persons employed	284, 329
Prussia	381	South Wales Coal-field, Counties	52
Queensland	285, 327	" Fatal accidents	86-88
Russia	285, 411	" Mineral output	168, 169
Saxony	385	" Persons employed	53, 54
South Australia... ..	285	Spain, Accidents	286, 287, 421, 422
Spain	285, 421	" Mineral output	285, 421
Sweden	285, 424	" Persons employed	284, 420
Tasmania	285, 330		

	Page.		Page.
Spelter (<i>see</i> Zinc)	268	Summary of Mineral output of British Empire ...	285
Spiegeleisen (<i>see</i> Iron)	218	" Foreign countries ...	285
Spitsbergen	422	Summary of Persons employed in Mines and Quarries	
Staffordshire, Clay	144, 162	of the United Kingdom	9
" Coal	144, 166, 170	Summary of Persons employed in Mines and Quarries	
" Gravel and sand	144, 197	of the British Empire	284
" Gypsum	144, 198	Summary of Persons employed in Mines and Quarries	
" Igneous rocks	144, 199	of Foreign countries	284
" Iron ore	144, 203, 204, 208	Surface, Accidents at Mines, on	22-25, 28-31, 40, 41, 70, 84, 87, 88
" Iron pyrites	144, 222	Surinam (<i>see</i> Dutch Guiana).	
" Limestone	145, 237	Surrey, Chalk	144, 160
" Oil shale	145, 243	" Chert and flint	144, 161
" Petroleum	244	" Clay	144, 162
" Salt	143, 249	" Fuller's earth	162
" Sandstone	145, 252	" Gravel and sand	144, 197
" Blast furnaces	212, 216	" Limestone	145, 237
" Coal conveyed by rail	174, 175	" Sandstone	145, 252
" Persons employed	55, 57, 60, 63, 145	" Lead smelters	235
Staffordshire and Worcestershire Canal Coal and Coke		" Persons employed	60, 63, 145
traffic	178	Sussex, Chalk	144, 160
Standard silver, Prices in the London market	255	" Chert and flint	144, 161
Steatite (<i>see</i> Soapstone).		" Clay	144, 162
Stirlingshire, Clay	146, 162	" Gravel and sand	144, 197
" Coal	146, 167, 170	" Gypsum	144, 198
" Gravel and sand	146, 197	" Sandstone	145, 252
" Igneous rocks	146, 200	" Persons employed	60, 63, 145
" Iron ore	146, 203, 204	Sutherland, Coal	146, 167, 170
" Limestone	147, 238	" Oil shale	147, 243
" Oil shale	147, 243	" Sandstone	147, 253
" Sandstone	147, 253	" Persons employed	55, 64, 147
" Blast furnaces	212, 219	Sweden, Accidents	286, 287, 424
" Coal conveyed by rail	175	" Mineral output	285, 424
" Persons employed	55, 61, 64, 147	" Persons employed	284, 423
Stokes, A. H., Remarks on an Acetylene gas accident	85, 97	Switzerland, Accidents	286, 287, 427
" " undercutting at quarries	94	" Mineral output	285, 426
" " Workmen's Compensation Act	104	" Persons employed	284, 425
Stones, Output of :		" Works under the charge of the Federal	
The United Kingdom	149	Inspector of Mines	425
Algeria	338	Syenite (<i>see</i> Igneous rocks).	
Belgium	354		
Canada	298		
Ceylon	307		
Channel Islands	308		
France	369		
Holland	389		
India	314-317		
Newfoundland	321		
New South Wales	322		
Ontario	301		
Queensland	327		
Roumania	408		
Tunis	428		
United States	434		
Victoria	333		
Straits Settlements	330		
Strontium sulphate, Output in United Kingdom	10, 39, 125, 260, 261, 290		
Suffocation by natural gases, Accidents from 22, 23, 28, 29, 82.	87, 88		
Suffolk, Chalk	144, 160		
" Chert and flint	144, 161		
" Clay	144, 162		
" Gravel and sand	144, 197		
" Persons employed	60, 63, 145		
Sulphate of barium, Output of United Kingdom	156-158		
" Spain	421		
" sodium (<i>see</i> Sodium sulphate).			
" strontia, Output of United Kingdom	10, 39, 125, 260, 261		
Sulphur or sulphur ore, Output of :			
Austria	343		
Greece	387		
Hungary	348		
Italy	394		
Japan	396		
New Zealand	325		
Russia	411		
Spain	421		
Sweden	424		
United States	434		
Sumatra, Mineral output	364, 365		
" Persons employed	365		
Summaries, County, of Mineral output and persons			
employed	128-149		
Summary of fatal accidents in Mines and Quarries of			
the United Kingdom	9		
Summary of fatal accidents in Mines and Quarries of			
the British Empire	286		
Summary of fatal accidents in Mines and Quarries of			
Foreign countries	286		
Summary of Metals produced from British ores	125		
Summary of Mineral output of United Kingdom	10, 125		
Summary of Mineral output of England, Wales,			
Scotland, Ireland, and Isle of Man, separately	126, 127		

T.

TAFF VALE RAILWAY Coal and Coke Traffic	175
Talo, Output of :	
Ceylon	307
France	369
United States	434
Tasmania, Accidents	286, 287, 331
" Mineral output	285, 331
" Persons employed	284, 330
Tennessee, Accidents at coal mines	436
" Persons employed	433
Testing of explosives for use in coal mines	108
Timbering, Systematic, Home Office Circular	74, 105
" Inspectors' remarks	74
Tin, Average price in the London market	264
" Exported	266
" Imported	265
" obtainable from British ore	125, 261-263, 291
" ore, Output of :	
Cornwall and Devon	261-263
Dolcoath Mine	261, 262
" smelters in Cornwall	266
" standards	265
" stream works in Cornwall	263
Tin or tin ore, Output of :	
United Kingdom	10, 39, 125, 261-263, 285, 290
Austria	285, 343
Banco and Billiton	363
Bolivia	285, 356
Chili	285, 359
Dutch East Indies	285
Federated Malay States	285, 310, 311
German Empire	285, 376
India	285, 314, 316
Japan	285, 396
Mexico	285, 398
New South Wales	285, 322
Peru	285, 403
Portugal	285, 405
Queensland	285, 327
Russia	411
Saxony	385

	Page.
Tin or tin ore, Output of— <i>cont.</i>	
Siam	285, 414
Singkep	364
South African Republic	285, 417
South Australia	285, 329
Spain	285, 421
Tasmania	285, 331
Victoria	285, 333
Western Australia	285, 336
Tipperary Co.: Coal	148, 167, 170
" Gravel and sand	148, 198
" Limestone	149, 238
" Sandstone	149, 253
" Slate	149, 256
" Persons employed	56, 65, 149
Titanium ore or rutile, Output of:	
Norway	401
United States	434
Tong-King, Output of coal	285, 390, 391
Tonite, Accidents with	81, 94
Topaz, Output of Spain	421
Tourmaline, Output of India	314, 316
Trams and tubs, Accidents	22, 23, 28-31, 80, 87, 88
Trent and Mersey Navigation Coal and Coke traffic	178
Trinidad, Output of asphalt	332
Tripoli and infusorial earth, Production of:	
Canada	298
Nova Scotia	300
United States	434
Tungsten ore (<i>see</i> Wolfram).	
Tunis, Mineral output	285, 428
Turbaries, France, Output from	368
" Holland, "	388
" Persons employed	388
" Italy, Output from	394
" Persons employed	393
" Russia, Output from	409
" Sweden, "	423
Turkey, Mineral resources	285, 428, 429
Turks and Caicos Islands, Output of Salt	285, 332
Tyrone Co.: Clay	148, 163
" Coal	148, 167, 170
" Gravel and sand	148, 198
" Igneous rocks	148, 200
" Limestone	149, 238
" Sandstone	149, 253
" Persons employed	56, 65, 149

U.

UMBER, ochre, &c., Output of:	
United Kingdom	10, 39, 125-241, 243, 290
Cyprus	309
Saxony	385
Underground fires at Mines	22-25, 28-31, 80, 82, 87, 88
" fire at Duneen Bay Barytes Mine	82
" " Southam Iron Ore Mine	82
" haulage accidents	22-25, 28-31, 80, 83, 87, 88
Union Canal Coal and Coke traffic	178
United States, Accidents	286, 287
" Machine mining	430
" Mineral output	285
" Persons employed	284
Uranium ore, Output of:	
United Kingdom	10, 39, 125, 267, 290
Austria	343
German Empire	376
Saxony	385
Uruguay, Output of gold	285, 437
Utah, Accidents at Coal Mines	436
" Persons employed	433

V.

VENEZUELA, Output of gold	285, 437
Victoria, Accidents	286, 287, 334
" Mineral output	285, 333
" Persons employed	284, 333

Vitriol ore, Output of:	
Austria	343
German Empire	376
Prussia	381

W.

WALES, Coal conveyed by rail from North and South	
Wales	174, 175
" Mineral output of, Summary	126
(<i>See also under each County.</i>)	
" North and South Wales Coal-fields:	
Accidents in Mines	36-88
Mineral output	168, 169
Persons employed	53, 54
Warwickshire, Clay	144, 162
" Coal	144, 166, 170
" Gravel and sand	144, 197
" Igneous rocks	144, 199
" Iron ore	144, 203, 204, 208
" Iron pyrites	144, 222
" Limestone	145, 237
" Sandstone	145, 252
" Coal conveyed by rail	174, 175
" Copper smelters	193
" Lead smelters	236
" Persons employed	55, 60, 63, 145
Washington, Accidents at coal mines	436
" Persons employed	433
Waterford Co.: Clay	148, 163
" Gravel and sand	148, 198
" Limestone	149, 238
" Sandstone	149, 253
" Persons employed	65, 149
Waterford and Central Ireland Railway Coal and Coke traffic	176
Waterford, Limerick and Western Railway Coal and Coke traffic	176
Wells, Brine, dredging, &c., County output of minerals from	142, 143
Western Australia, Fatal accidents	286, 287, 336
" Legislation	335
" Mineral output	285, 335
" Persons employed	335
Westfalia, accidents with	81
Westmeath Co., Limestone	149, 238
" Sandstone	149, 253
" Persons employed	65, 149
Westmorland, Barytes	144, 156, 158
" Clay	144, 162
" Coal	144, 166, 170
" Gypsum	144, 198
" Igneous rocks	144, 200
" Lead ore	145, 226, 228
" Limestone	145, 237
" Sandstone	145, 252
" Slate	145, 256, 257
" Lead smelters	236
" Persons employed	55, 60, 63, 145
West Virginia, Accidents at Coal Mines	436
" Output of coal	433
" Persons employed	433
Wexford Co., Igneous rocks	148, 200
" Limestone	149, 238
" Sandstone	149, 253
" Slate	149, 256
" Persons employed	65, 149
Whetstones, Production of:	
Bavaria	380
France	369
White salt, Conveyed by railway, canal, &c.	250, 251
" Exported	251
" Produced in United Kingdom	249
Wicklow Co., Copper ore	148, 185, 186
" Gravel and sand	148, 198
" Igneous rocks	148, 200
" Iron pyrites	148, 222
" Lead ore	149, 226, 229
" Ochre	149, 241, 242
" Persons employed	61, 65, 149
Wigtown, Igneous rocks	146, 200
" Persons employed	64, 147
Wiltshire, Chalk	144, 160
" Clay	144, 162
" Gravel and sand	144, 197
" Iron ore	144, 203, 208
" Limestone	145, 237
" Sandstone	145, 252
" Blast furnaces	212, 217
" Persons employed	60, 63, 145

	Page.
Wolfram, Output of	
United Kingdom	10, 39, 125, 267, 268, 290
Austria	343
Bolivia	356
Federated Malay States	310
German Empire... ..	376
Portugal	405
Queensland	327
Saxony	385
Spain	421
Worcestershire, Clay	144, 162
" Coal... ..	144, 166, 170
" Gravel and sand	144, 197
" Igneous rocks	144, 199
" Iron ore	144, 203, 204, 208
" Limestone	145, 237
" Salt	145, 249
" Sandstone	145, 252
" Blast furnaces	212, 217
" Copper smelters	193
" Persons employed	55, 60, 63, 145
Workmen's Compensation Act, Remarks...	104

Y.

YORKSHIRE, Alum shale	145
" Barytes	144, 156, 158
" Chalk	144, 160
" Chert and flint	144, 161
" Clay	144, 162
" Coal	144, 166, 170
" Gravel and sand	144, 197
" Igneous rocks... ..	144, 199
" Iron ore	144, 203, 204, 208
" Lead ore	145, 226, 228
" Limestone	145, 237
" Salt	145, 249
" Sandstone	145, 252
" Slate	145, 256, 257
" Blast furnaces	212, 217
" Coal conveyed by rail	174, 175
" Copper smelters... ..	193

Yorkshire, Lead smelters	Page
" Persons employed	236
" Coalfield, Counties	55, 57, 60, 63, 145
" " Fatal accidents	52
" " Mineral output	86-88
" " Persons employed	168, 169
" " "	53, 54

Z.

ZINC, Average price in the London market	273
" Diagram shewing fluctuations in price from 1873 to 1899	274
" Obtainable from British ores	125, 268-270, 291
" Smelters in United Kingdom	274
" and zinc ore, Exported	272
" " Imported	271
" or zinc ore, Output of :	
United Kingdom	10, 39, 125, 268-271, 285, 290
Algeria	285, 338
Austria	285, 343
Belgium	285, 354
Boenia and Herzegovina	285, 350
France	285, 368
German Empire... ..	285, 376
Greece	285, 387
Italy	285, 394
Mexico	285, 398
New South Wales	285, 322
Norway	285, 401
Portugal	405
Prussia	381
Quebec	302
Russia	285, 411
Saxony	385
Servia	418
South Australia... ..	285, 329
Spain	285, 421
Sweden	285, 424
Tunis	285, 428
United States	285, 434, 435

	Page.
Tin or tin ore, Output of—cont.	
Siam	285, 414
Singkep	364
South African Republic	285, 417
South Australia	285, 329
Spain	285, 421
Tasmania	285, 331
Victoria	285, 333
Western Australia	285, 336
Tipperary Co: Coal	148, 167, 170
" Gravel and sand	148, 198
" Limestone	149, 238
" Sandstone	149, 253
" Slate	149, 256
" Persons employed	56, 65, 149
Titanium ore or rutile, Output of:	
Norway	401
United States	434
Tong-King, Output of coal	285, 390, 391
Tonite, Accidents with	81, 94
Topaz, Output of Spain	421
Tourmaline, Output of India	314, 316
Trams and tube, Accidents	22, 23, 28-31, 80, 87, 88
Trent and Mersey Navigation Coal and Coke traffic	178
Trinidad, Output of asphalt	332
Tripoli and infusorial earth, Production of:	
Canada	298
Nova Scotia	300
United States	434
Tungsten ore (see Wolfram).	
Tunis, Mineral output	285, 428
Turbaries, France, Output from	368
" Holland,	388
" Persons employed	388
" Italy, Output from	394
" Persons employed	393
" Russia, Output from	409
" Sweden,	423
Turkey, Mineral resources	285, 428, 429
Turks and Caicos Islands, Output of Salt	285, 332
Tyrone Co: Clay	148, 163
" Coal	148, 167, 170
" Gravel and sand	148, 198
" Igneous rocks	148, 200
" Limestone	149, 238
" Sandstone	149, 253
" Persons employed	56, 65, 149

U.

UMBER, ochre, &c., Output of:	
United Kingdom	10, 39, 125-241, 243, 290
Cyprus	309
Saxony	385
Underground fires at Mines	22-25, 28-31, 80, 82, 87, 88
" fire at Duncun Bay Barytes Mine	82
" Southam Iron Ore Mine	82
" haulage accidents	22-25, 28-31, 80, 83, 87, 88
Union Canal Coal and Coke traffic	178
United States, Accidents	286, 287
" Machine mining	430
" Mineral output	285
" Persons employed	284
Uranium ore, Output of:	
United Kingdom	10, 39, 125, 267, 290
Austria	343
German Empire	376
Saxony	385
Uruguay, Output of gold	285, 437
Utah, Accidents at Coal Mines	436
" Persons employed	433

V.

VENEZUELA, Output of gold	285, 437
Vermont, Accidents	286, 287, 234
" Mineral output	285, 333
" Persons employed	284, 333

Vitriol ore, Output of:	
Austria	343
German Empire	376
Prussia	381

W.

WALES, Coal conveyed by rail from North and South	
Wales	174, 175
" Mineral output of, Summary	126
(See also under each County.)	
" North and South Wales Coal-fields:	
Accidents in Mines	86-88
Mineral output	168, 169
Persons employed	53, 54
Warwickshire, Clay	144, 162
" Coal	144, 166, 170
" Gravel and sand	144, 197
" Igneous rocks	144, 199
" Iron ore	144, 203, 204, 206
" Iron pyrites	144, 222
" Limestone	145, 237
" Sandstone	145, 253
" Coal conveyed by rail	174, 175
" Copper smelters	193
" Lead smelters	236
" Persons employed	55, 60, 63, 145
Washington, Accidents at coal mines	436
" Persons employed	433
Waterford Co: Clay	148, 163
" Gravel and sand	148, 198
" Limestone	149, 238
" Sandstone	149, 253
" Persons employed	65, 149
Waterford and Central Ireland Railway Coal and Coke	
traffic	176
Waterford, Limerick and Western Railway Coal and	
Coke traffic	176
Wells, Brine, dredging, &c., County output of minerals	
from	142, 143
Western Australia, Fatal accidents	286, 287, 336
" Legislation	335
" Mineral output	285, 335
" Persons employed	335
Westfalite, accidents with	81
Westmeath Co., Limestone	149, 238
" Sandstone	149, 253
" Persons employed	65, 149
Westmorland, Barytes	144, 156, 158
" Clay	144, 162
" Coal	144, 166, 170
" Gypsum	144, 198
" Igneous rocks	144, 200
" Lead ore	145, 226, 227
" Limestone	145, 238
" Sandstone	145, 253
" Slate	145, 256, 257
" Lead smelters	236
" Persons employed	55, 60, 63, 145
West Virginia, Accidents at Coal Mines	436
" Output of coal	433
" Persons employed	433
Wexford Co., Igneous rocks	148, 200
" Limestone	149, 238
" Sandstone	149, 253
" Slate	149, 256
" Persons employed	65, 149
Whetstones, Production of:	
Bavaria	380
France	369
White salt, Conveyed by railway, canal, &c.	250, 251
" Exported	251
" Produced in United Kingdom	249
Wicklow Co., Copper ore	148, 185, 186
" Gravel and sand	148, 198
" Igneous rocks	148, 200
" Iron pyrites	148, 222
" Lead ore	149, 226, 229
" Ochre	149, 241, 242
" Persons employed	61, 65, 149
Wigtown, Igneous rocks	146, 200
" Persons employed	64, 147
Wiltshire, Chalk	144, 160
" Clay	144, 162
" Gravel and sand	144, 197
" Iron ore	144, 203, 206
" Limestone	145, 237
" Sandstone	145, 253
" Blast furnaces	212, 217
" Persons employed	60, 63, 145

	Page.
Wolfram, Output of	
United Kingdom	10, 39, 125, 267, 268, 290
Austria	343
Bolivia	356
Federated Malay States	310
German Empire... ..	376
Portugal	405
Queensland	327
Saxony	385
Spain	421
Worcestershire, Clay	144, 162
" Coal... ..	144, 166, 170
" Gravel and sand	144, 197
" Igneous rocks	144, 199
" Iron ore	144, 203, 204, 208
" Limestone	145, 237
" Salt	145, 249
" Sandstone	145, 252
" Blast furnaces	212, 217
" Copper smelters	193
" Persons employed	55, 60, 63, 145
Workmen's Compensation Act, Remarks...	104

Y.

YORKSHIRE, Alum shale	145
" Barytes	144, 156, 158
" Chalk	144, 160
" Chert and flint	144, 161
" Clay	144, 162
" Coal	144, 166, 170
" Gravel and sand	144, 197
" Igneous rocks... ..	144, 199
" Iron ore	144, 203, 204, 208
" Lead ore	145, 226, 228
" Limestone	145, 237
" Salt	145, 249
" Sandstone	145, 252
" Slate	145, 256, 257
" Blast furnaces	212, 217
" Coal conveyed by rail	174, 175
" Copper smelters... ..	193

Yorkshire, Lead smelters	Page
" Persons employed	236
" Coalfield, Counties	55, 57, 60, 63, 145
" " Fatal accidents	52
" " Mineral output	86-88
" " Persons employed	168, 169
" " "	53, 54

Z.

ZINC, Average price in the London market	273
" Diagram shewing fluctuations in price from 1873 to 1899	274
" Obtainable from British ores	125, 268-270, 291
" Smelters in United Kingdom	274
" and zinc ore, Exported	272
" " Imported	271
" or zinc ore, Output of :	
United Kingdom	10, 39, 125, 268-271, 285, 290
Algeria	285, 338
Austria	285, 343
Belgium	285, 354
Bosnia and Herzegovina	285, 350
France	285, 368
German Empire... ..	285, 376
Greece	285, 387
Italy	285, 394
Mexico	285, 398
New South Wales	285, 322
Norway	285, 401
Portugal	405
Prussia	381
Quebec	302
Russia	285, 411
Saxony	385
Servia	413
South Australia... ..	285, 329
Spain	285, 421
Sweden	285, 424
Tunis	285, 428
United States	285, 434, 435

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EDITED BY

C. LE NEVE FOSTER, D.Sc., F.R.S.,
ONE OF HER MAJESTY'S INSPECTORS OF MINES.

Presented to both Houses of Parliament by Command of Her Majesty



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CONTENTS.

	PAGE.
Introduction	299, 300
British Empire :—	
Summary of Persons Employed at Mines and Quarries	302
Summary of Output of certain Minerals	303
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries	304, 305
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings :—	
United Kingdom	307-309
British Colonies and Dependencies :—	
Aden... ..	310
Bahamas	310
Barbados	310
Basutoland	311
Bechuanaland Protectorate... ..	311
British Borneo	311
British Central Africa Protectorate	312
British Guiana	312, 313
British New Guinea	313
British Solomon Islands	314
Canada	314-320
Cape Colony	321-324
Ceylon	325, 326
Channel Islands	326
Christmas Island	326
Cyprus	327
Federated Malay States	327-329
Gold Coast	329, 330
India	331-337
Malta	337
Natal	337, 338
Newfoundland	338, 339
New South Wales	340-342
New Zealand... ..	343-345
Nigeria	345
Orange River Colony	345
Queensland	345-347
Redonda	347
Rhodesia	348
Somali Coast Protectorate	348
Sombrero	348
South Australia	348, 349
Straits Settlements	349
Tasmania	350, 351
Transvaal	351
Trinidad	351, 352
Turks and Caicos Islands	352
Uganda Protectorate	352
Victoria	353, 354
Western Anstralia	354, 355

PAGE.

Summary of Persons Employed at Mines and Quarries	...	...	...	...	...	...	...	...
Summary of Output of certain Minerals	...	...	...	..	...	...	...	...
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries	...	...	...	...	...	...	...	...
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings :—								
Abyssinia	...	...	...	...	...	...	...	...
Algeria	...	...	...	...	...	...	...	...
Arabia ...	...	...	...	...	...	...	...	...
Argentine Republic...	...	...	...	...	...	...	...	...
Austria-Hungary	...	...	...	...	...	...	...	...
Belgium	...	...	...	...	...	...	...	...
Bolivia	...	...	...	...	...	...	...	...
Bosnia and Herzegovina	...	...	...	...	...	...	...	...
Brazil ...	...	...	...	...	...	...	...	...
Bulgaria	...	...	...	...	...	...	...	...
Canary Islands	...	...	...	...	...	...	...	...
Chili ...	...	...	...	...	...	...	...	...
China ...	...	...	...	...	...	...	...	...
Colombia	...	...	...	...	...	...	...	...
Congc Free State	...	...	...	...	...	...	...	...
Corea ...	...	...	...	...	...	...	...	...
Costa Rica	...	...	...	...	...	...	...	...
Cuba ...	...	...	...	...	...	...	...	...
Denmark	...	...	...	...	...	...	...	...
Dutch East Indies	...	...	...	...	...	...	...	...
Dutch Guiana or Surinam	...	...	...	...	...	...	...	...
Dutch West Indies	...	...	...	...	...	...	...	...
Ecuador	...	...	...	...	...	...	...	...
Egypt ...	...	...	...	...	...	...	...	...
Eritrea	...	...	...	...	...	...	...	...
Formosa	...	...	...	...	...	...	...	...
France...	...	...	...	...	...	...	...	...
French Guiana	...	...	...	...	...	...	...	...
French Soudan	...	...	...	...	...	...	...	...
German East Africa	...	...	...	...	...	...	...	...
German Empire	...	...	...	...	...	...	...	...
German West Africa	...	...	...	...	...	...	...	...
Greece...	...	...	...	...	...	...	...	...
Guatemala	...	...	...	...	...	...	...	...
Hayti ...	...	...	...	...	...	...	...	...
Holland	...	...	...	...	...	...	...	...
Honduras	...	...	...	...	...	...	...	...
Indo-China	...	...	...	...	...	...	...	...
Italy ...	...	...	...	...	...	...	...	...
Ivory Coast	...	...	...	...	...	...	...	...

Foreign Countries—*continued.*Details relating to Persons Employed, &c.—*cont.*

	PAGE.
Japan	420-422
Johore... ..	422
Luxemburg	422
Madagascar	422
Mexico	423, 424
Morocco	424
New Caledonia	424, 425
Nicaragua	425
Norway	425, 426
Paraguay	427
Persia	427
Peru	427, 428
Philippine Islands	429
Porto Rico	429
Portugal	429-431
Portuguese East Africa	432
Roumania	432, 433
Russia	434-437
Sahara	437
Sandwich Islands	438
Senegal	438
Servia	438, 439
Siam	439
Spain	440-443
Spitzbergen	443
Sweden	443-445
Switzerland	445-448
Tunis	448, 449
Turkey	449, 450
United States... ..	451-458
Uruguay	458
Venezuela	459

Index to Parts I., II., III., and IV.	461-480
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MINES AND QUARRIES:
GENERAL REPORT AND STATISTICS
For 1900.

PART IV.—COLONIAL AND FOREIGN STATISTICS.

INTRODUCTION.

The object of this part of the General Report is to compare the mineral industries of the United Kingdom and the British Possessions with those of foreign countries, and in order to do this it is necessary to collect figures from every country where mining and quarrying are carried on ; in other words, to compile the mineral statistics of the world.

Even at first sight such a task appears formidable, and in carrying it out difficulty after difficulty crops up.

In the first place some countries possessing a considerable amount of mineral wealth, such as China with its huge coalfields, Persia, Turkey, the Argentine Republic, &c., publish no mineral statistics whatever ; secondly, certain important European countries with large mining departments are extremely late in issuing their figures ; thus the French statistics for 1900 were not received until the 6th instant, whilst the Austrian and the Russian are still incomplete. In the third place, some of the official reports published by our Colonies or foreign countries are unsatisfactory from the point of view of a compiler, who has to wade through page after page of details before being able to cull from them the leading facts which he requires.

There is a tendency in the Colonies and elsewhere to swell the value of the so-called mineral output by inserting the manufactured products instead of the raw material, and consequently the comparison is not so exact as it might be if all countries would adopt a uniform system.

It will be understood, therefore, that under existing conditions it is impossible to compile a thoroughly satisfactory account of the mining statistics of the world.

As will be seen by the footnotes, the amount of current literature which has to be read is enormous, and hundreds of books, pamphlets, and newspapers in English, Dutch, French, German, Italian, Spanish, Swedish, and Norwegian have to be consulted in compiling the pages which follow.

Thanks to the courtesy of the Mining Department of Japan, and the Scientific Mine Committee in Russia, we receive the statistics from those countries in the English language.

From the figures which have been received, Tables 278, 279, and 280 have been drawn out. They show the number of persons employed, the quantities of the most important minerals raised, and the deaths from accidents. We thus have a comparison as regards labour, output, and safety.

Making every allowance for the incompleteness of the figures in Table 278, it may still be safely said that the total number of persons employed in the Mines and Quarries of the British Empire far exceeds that of any other country.

From Table 279 it appears that, though the United States have outstripped Great Britain in their output of coal, the British Empire as a whole is still the largest producer of solid fossil fuel, yielding nearly one-third of the world's output. Our gold output is also the largest, and probably will increase. The United States are far ahead of us as producers of the ores of copper, iron, lead, and zinc, and in the case of petroleum, the British Empire produces little compared with America or Russia.

It is curious that just as England was a supplier of tin to the world in ancient days, the British Empire happens at the present moment, thanks to Tasmania and the Federated Malay States, to have the most important deposits of that ore within its territories.

The rapid increase of the coal production of the United States is due in part to the introduction of coal-cutting machinery. In this connection the Tables on pages 451 and 452, are of special interest.

As regards the safety of its miners, Great Britain takes a high place, but in making comparisons with other countries employing only a small number of persons it is advisable to take an average for a series of years rather than lay too much stress upon the figures for twelve months which may be exceptional.

C. LE NEVE FOSTER.

Home Office, Whitehall,
15th January, 1902.

SUMMARIES.

**PERSONS EMPLOYED—OUTPUT—ACCIDENTS,
1899-1900.**

SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the YEARS 1899 and 1900.

[illegible]

TABLE No. 280.

SUMMARY of ACCIDENTS at MINES, QUARRIES, and other MINERAL WORKINGS in the

COUNTRY.	DEATHS FROM ACCIDENTS.										
	1899.						1900.				
	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	All Mines and Quarries.
GREAT BRITAIN AND IRELAND ..	886	—	86	972	117	1,089	908	—	87	1,050	1,137
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—											
Aden*	—	—	—	—	—	—	—	—	—	—	—
Bahamas*	—	—	—	—	—	—	—	—	—	—	—
Barbados*	—	—	—	—	—	—	—	—	—	—	—
Bechuanaland Protectorate*	—	—	—	—	—	—	—	—	—	—	—
British Borneo*	—	—	—	—	—	—	—	—	—	—	—
British Central Africa Protectorate*	—	—	—	—	—	—	—	—	—	—	—
British Guiana	—	4	—	4	—	4	—	6	—	6	6
British New Guinea*	—	—	—	—	—	—	—	—	—	—	—
British Solomon Islands*	—	—	—	—	—	—	—	—	—	—	—
Canada:—											
British Columbia	11	—	—	—	—	—	17	†	13	30	—
Nova Scotia	19	—	—	—	—	—	22	—	—	—	—
Ontario*	—	11	3	14	—	—	—	—	—	—	—
Cape Colony	7	—	85‡	28	2	90	11	—	21‡	—	—
Ceylon*	—	—	—	—	—	—	—	—	—	—	—
Channel Islands*	—	—	—	—	—	—	—	—	—	—	—
Cyprus*	—	—	—	—	—	—	—	—	—	—	—
Federated Malay States*	—	—	—	23§	—	—	—	—	—	—	—
Gold Coast*	—	—	—	—	—	—	—	—	—	—	—
India	98	51	4	—	—	—	62	64	9	—	—
Malta*	—	—	—	—	—	—	—	—	—	—	—
Natal (including Zululand)	11	1	—	—	—	—	1	—	—	—	—
Newfoundland	—	—	—	—	—	—	—	—	—	—	—
New South Wales	10	18	21	49	—	—	24	11	31	66	—
New Zealand	8	31	—	—	—	—	4	13	—	—	—
Nigeria*	—	—	—	—	—	—	—	—	—	—	—
Orange River*	—	—	—	—	—	—	—	—	—	—	—
Queensland	1	18	—	19	—	—	9	17	1	27	—
Rhodania*	—	—	—	—	—	—	—	—	—	—	—
Rhodesia*	—	—	—	—	—	—	—	—	—	—	—
Somali Coast Protectorate*	—	—	—	—	—	—	—	—	—	—	—
South Australia**	—	1	—	—	—	—	—	—	—	—	—
Tasmania*	—	—	—	—	—	—	—	—	—	7	—
Transvaal*	—	—	—	—	—	—	—	—	—	—	—
Trinidad*	—	—	—	—	—	—	—	—	—	—	—
Turks and Caicos Islands*	—	—	—	—	—	—	—	—	—	—	—
Victoria	4	41	—	45	—	—	1	35	—	36	—
Western Australia	1	44	—	45	—	—	—	45	—	45	—
TOTAL FOR BRITISH EMPIRE ..	1,051	210	—	—	—	—	1,144	191	—	—	—
FOREIGN COUNTRIES:—											
Austria-Hungary:—											
Austria*	156	—	22	178	—	—	—	—	—	—	—
Hungary	—	—	—	106	—	—	—	—	—	—	—
Bosnia and Herzegovina	—	—	—	3	—	—	—	—	—	—	—
Belgium	121	—	1	122	24	146	140	—	2	141	168
France	208	—	28	236	168	404	230	—	30	260	437
Algeria	—	—	—	4	6	10	—	—	—	6	25
New Caledonia*	—	—	—	—	—	—	—	—	—	—	—
German Empire	934	—	126††	1,060††	262	1,322	1,016	—	129††	1,145††	1,412
Greece*	—	—	—	3	—	—	—	—	—	—	—
Holland	2	—	—	—	—	—	2	—	—	—	—
Italy	—	—	—	107	34	141	—	—	—	119	142
Japan*	—	—	—	674	—	—	—	—	—	—	—
Mexico*	—	—	—	109	—	—	—	—	—	—	—
Norway*	—	—	—	—	—	—	—	—	—	—	—
Peru*	—	—	—	—	—	—	—	—	—	—	—
Portugal*	1	—	—	—	—	—	—	—	—	—	—
Roumania*	—	—	7	8	—	—	—	—	—	—	—
Russia*	—	—	—	—	—	—	—	—	—	—	—
Servia	—	—	—	—	—	—	—	—	—	—	—
Spain	—	—	—	222	—	—	—	—	—	227	—
Sweden	—	—	—	—	—	16	—	—	—	—	14
Switzerland*	—	—	—	1	4	5	—	—	—	—	—
United States	1,210§§	—	—	—	—	—	1,473§§	—	—	—	—
TOTAL FOR FOREIGN COUNTRIES.	2,632	—	—	—	—	—	2,868	—	—	—	—
TOTAL for the WORLD ..	3,683	—	—	—	—	—	4,012	—	—	—	—

* Information for 1900 not available.

† Included with other mines.

‡ Kimberley Diamond Mines only.

§ Excluding Pahang and Perak.

¶ The accidents at coal mines relate to producing collieries only.

|| This death-rate cannot be calculated as the number of persons employed is not stated

TABLE No. 280.

BRITISH EMPIRE and in FOREIGN COUNTRIES during the Years 1899 and 1900.

DEATH-RATES PER 1,000 PERSONS EMPLOYED.												COUNTRY.
1899.						1900.						
Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	
1'24	—	1'76	1'27	1'19	1'26	1'29	—	1'20	1'28	1'35	1'30	GREAT BRITAIN AND IRELAND.
—	—	—	—	—	—	—	—	—	—	—	—	BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—
—	—	—	—	—	—	—	—	—	—	—	—	Aden.*
—	—	—	—	—	—	—	—	—	—	—	—	Bahamas.*
—	—	—	—	—	—	—	—	—	—	—	—	Barbados.*
—	—	—	—	—	—	—	—	—	—	—	—	Bechuanaland Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Borneo.*
—	—	—	—	—	—	—	—	—	—	—	—	British Central Africa Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Guiana.
—	—	—	—	—	—	—	—	—	—	—	—	British New Guinea.*
—	—	—	—	—	—	—	—	—	—	—	—	British Solomon Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Canada:—
—	—	—	—	—	—	—	—	—	—	—	—	British Columbia.
—	—	—	—	—	—	—	—	—	—	—	—	Nova Scotia.
—	—	—	—	—	—	—	—	—	—	—	—	Ontario.*
—	—	—	—	—	—	—	—	—	—	—	—	Cape Colony.
—	—	—	—	—	—	—	—	—	—	—	—	Ceylon.*
—	—	—	—	—	—	—	—	—	—	—	—	Channel Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Cyprus.*
—	—	—	—	—	—	—	—	—	—	—	—	Federated Malay States.
—	—	—	—	—	—	—	—	—	—	—	—	Gold Coast.*
—	—	—	—	—	—	—	—	—	—	—	—	India.
—	—	—	—	—	—	—	—	—	—	—	—	Malta.*
—	—	—	—	—	—	—	—	—	—	—	—	Natal (including Zululand).†
—	—	—	—	—	—	—	—	—	—	—	—	Newfoundland.*
—	—	—	—	—	—	—	—	—	—	—	—	New South Wales.
—	—	—	—	—	—	—	—	—	—	—	—	New Zealand.
—	—	—	—	—	—	—	—	—	—	—	—	Nigeria.*
—	—	—	—	—	—	—	—	—	—	—	—	Orange River.*
—	—	—	—	—	—	—	—	—	—	—	—	Queensland.
—	—	—	—	—	—	—	—	—	—	—	—	Rodonda.
—	—	—	—	—	—	—	—	—	—	—	—	Rhodesia.
—	—	—	—	—	—	—	—	—	—	—	—	Somali Coast Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	South Australia.**
—	—	—	—	—	—	—	—	—	—	—	—	Tasmania.*
—	—	—	—	—	—	—	—	—	—	—	—	Transvaal.*
—	—	—	—	—	—	—	—	—	—	—	—	Trinidad.*
—	—	—	—	—	—	—	—	—	—	—	—	Turks and Caicos Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Victoria.
—	—	—	—	—	—	—	—	—	—	—	—	Western Australia.
—	—	—	—	—	—	—	—	—	—	—	—	
1'28	1'73	—	—	—	—	1'29	1'61	—	—	—	—	TOTAL FOR BRITISH EMPIRE.
—	—	—	—	—	—	—	—	—	—	—	—	FOREIGN COUNTRIES
—	—	—	—	—	—	—	—	—	—	—	—	Austria-Hungary:—
—	—	—	—	—	—	—	—	—	—	—	—	Austria.*
—	—	—	—	—	—	—	—	—	—	—	—	Hungary.
—	—	—	—	—	—	—	—	—	—	—	—	Bosnia and Herzegovina.
—	—	—	—	—	—	—	—	—	—	—	—	Belgium.*
—	—	—	—	—	—	—	—	—	—	—	—	France.
—	—	—	—	—	—	—	—	—	—	—	—	Algeria.
—	—	—	—	—	—	—	—	—	—	—	—	New Caledonia.*
—	—	—	—	—	—	—	—	—	—	—	—	German Empire.
—	—	—	—	—	—	—	—	—	—	—	—	Greece.*
—	—	—	—	—	—	—	—	—	—	—	—	Holland.
—	—	—	—	—	—	—	—	—	—	—	—	Italy.
—	—	—	—	—	—	—	—	—	—	—	—	Japan.*
—	—	—	—	—	—	—	—	—	—	—	—	Mexico.*
—	—	—	—	—	—	—	—	—	—	—	—	Norway.*
—	—	—	—	—	—	—	—	—	—	—	—	Peru.*
—	—	—	—	—	—	—	—	—	—	—	—	Portugal.*
—	—	—	—	—	—	—	—	—	—	—	—	Roumania.*
—	—	—	—	—	—	—	—	—	—	—	—	Russia.*
—	—	—	—	—	—	—	—	—	—	—	—	Servia.*
—	—	—	—	—	—	—	—	—	—	—	—	Spain.
—	—	—	—	—	—	—	—	—	—	—	—	Sweden.
—	—	—	—	—	—	—	—	—	—	—	—	Switzerland.*
—	—	—	—	—	—	—	—	—	—	—	—	United States
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—		

** Northern Territory only.

†† Including accidents at Smelting Works.

‡ This death-rate represents the persons insured in the mining and smelting branch of the German Official Insurance Association. For true mining death-rates in Prussia see p. 407.

§ The figures relate to 17 of the principal coal-producing states.

10/10/10

BRITISH EMPIRE.

GREAT BRITAIN AND IRELAND..

WITH THE
ISLE OF MAN.

The following Tables summarize the results of Parts II. and III. of the General Report:—

TABLE 281.

PERSONS EMPLOYED at all the MINES for the Years 1899 and 1900.

Year.	Total Number of Mines at Work.	Below-ground.			Above-ground.			Total Below and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1899	4,010	603,627	None	603,627	155,378	5,161	160,539	764,166
1900	4,148	644,242	None	644,242	165,052	5,223	170,275	814,517
Increase or decrease ...	+ 138	+ 40,615	—	+ 40,615	+ 9,674	+ 62	+ 9,736	+ 50,351

TABLE 282.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the
Years 1899 and 1900.

Year.	Total Number of Quarries at Work.	INSIDE THE QUARRIES, i.e., inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, i.e., outside the actual pits, holes, or excavations.			Total Number of Persons Employed Inside and Outside the Quarries.
		Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1899	6,994	64,147	12	64,159	33,716	120	33,836	97,995
1900	6,959	60,621	10	60,631	33,219	45	33,264	93,895
Decrease ...	— 35	— 3,526	— 2	— 3,528	— 497	— 75	— 572	— 4,100

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 283.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, and other WORKINGS.*

Mineral.	1899.			1900.		
	Quantity.		Value at the Mines and Quarries.	Quantity.		Value at the Mines and Quarries.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Alum shale	5,890	5,913	728	1,308	1,329	164
Arsenical pyrites	13,519	13,736	12,138	9,573	9,727	8,710
Arsenic	3,829	3,890	54,236	4,081	4,146	67,028
Barytes	24,664	25,059	25,644	29,456	29,929	29,244
Bauxite	8,009	8,138	1,871	5,779	5,872	1,350
Bog ore	4,321	4,390	1,080	4,153	4,220	1,038
Chalk... ..	4,678,132	4,753,205	209,629	4,373,331	4,443,512	208,032
Chert and Flint	68,834	69,939	13,216	77,693	78,940	13,900
Clay	15,064,857	15,306,612	1,542,657	14,049,694	14,275,158	1,571,043
Opal	220,094,781	223,626,774	83,481,137	225,181,300	228,794,919	121,652,596
Copper ore	8,144	8,275	83,798	9,108	9,254	34,503
Copper precipitate	175	178	1,550	380	386	2,450
Fluor spar	783	796	841	1,448	1,471	1,604
Gold ore	3,047	3,096	10,170	20,802	21,136	42,925
Gravel and Sand	1,771,276	1,799,701	132,399	1,837,202	1,866,685	138,163
Gypsum	212,563	215,974	76,456	208,038	211,377	69,642
Igneous Rocks	4,709,925	4,785,508	1,093,763	4,634,301	4,708,670	1,238,747
Iron ore	14,461,330	14,693,400	3,895,485	14,028,208	14,253,327	4,224,400
Iron pyrites	12,230	12,420	4,671	12,279	12,476	5,788
Lead ore	30,999	31,496	296,784	32,010	32,524	349,094
Limestone (other than Chalk)	12,302,890	12,500,322	1,335,067	11,905,477	12,096,531	1,300,314
Manganese ore	415	422	249	1,362	1,384	675
Mica	650	660	244	—	—	—
Ochre, Umber, &c.	16,314	16,576	13,579	15,200	15,444	13,398
Oil shale	2,210,824	2,246,302	553,003	2,282,221	2,318,845	627,844
Petroleum	5	5	12	—	—	—
Phosphate of lime	1,446	1,469	2,529	620	630	1,085
Salt	1,914,893	1,945,622	644,174	1,861,347	1,891,217	611,920
Sandstone	5,212,624	5,296,274	1,653,704	5,019,874	5,100,431	1,586,045
Slate	639,840	650,108	1,787,071	585,859	595,261	1,528,336
Strontium sulphate	12,629	12,832	6,314	9,121	9,267	4,560
Tin ore (dressed)	6,392	6,494	440,509	6,800	6,909	523,604
Uranium ore	7	7	275	41	42	1,517
Wolfram	94	95	3,831	9	9	351
Zinc ore	23,135	23,506	139,482	24,675	25,071	97,606
Total values	—	—	97,470,296	—	—	135,957,676

* This table does not include the produce of quarries less than 20 feet deep except in the case of iron ore, ochre, phosphate of lime, strontium sulphate and tin ore.

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—*continued.*

TABLE 284.

SUMMARY of the METALS obtainable by SMELTING from the ORES in the preceding TABLE.

Metal	1899.			1900.		
	Quantity.		Value at the Average Market Price.	Quantity.		Value at the Average Market Price.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Aluminium	550	559	71,125	560	569	72,800
Copper	637	647	49,768	765	777	59,995
Gold	ozs. 3,327	kilos. 103	12,086	ozs. 14,004	kilos. 436	52,147
Iron	4,913,846	4,992,701	17,084,874	4,666,942	4,741,835	19,596,910
Lead	23,552	23,930	355,379	24,864	24,755	418,960
Silver	ozs. 191,927	kilos. 5,970	21,942	ozs. 190,850	kilos. 5,936	22,465
Sodium	380	386	41,350	250	254	81,000
Tin	4,013	4,077	508,094	4,268	4,336	587,869
Zinc	8,698	8,838	220,132	9,066	9,211	188,573
Total values	—	—	18,314,750*	—	—	21,030,719

TABLE 285.

FATAL ACCIDENTS and DEATHS at all the MINES for the Years 1899 and 1900.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate from Accidents.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Per 1,000 Persons employed Below-ground.	Per 1,000 Persons employed Above-ground.	Per 1,000 Persons employed Above and Below Ground.
1899	794	121	915	851	121	972	1·41	·75	1·27
1900	884	115	999	931	119	1,050	1·45	·70	1·29
Increase or decrease ...	+ 90	— 6	+ 84	+ 80	— 2	+ 78	+ ·04	— ·05	+ ·02

TABLE 286.

DEATHS from ACCIDENTS at QUARRIES* during the Years 1899 and 1900.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate per 1,000 Persons employed.		
	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.
1899	98	19	117	98	19	117	1·53	·56	1·19
1900	112	12	124	115	12	127	1·90	·36	1·35
Increase or decrease ...	+ 14	— 7	+ 7	+ 17	— 7	+ 10	+ ·37	— ·20	+ ·16

* More than 20 feet deep.

BRITISH COLONIES AND DEPENDENCIES.

Aden.

Salt is made by the evaporation of sea-water, and the Government revenue is partly obtained from duty upon this product.

TABLE 287.

	1900.			1899.		
	Quantity.		Value.	Quantity.		Value.
Salt	Statute Tons. 49,763	Metric Tons. 50,562	£ 19,704	Statute Tons. 41,181	Metric Tons. 41,842	£ 16,263

Bahamas.†

Bay salt is produced in the Bahamas by the solar evaporation of sea water. The principal producers are Inagua, Rum Cay, and Ragged Island. During the year 1900 the number of persons employed temporarily was about 400.

The salt pans are of great extent, but owing to very heavy rains some years ago much vegetable matter was brought down and deposited in them, and the industry has never recovered from this mishap.

The output during the last two years has been as follows :—

TABLE 288.

	Year.	Quantity.		Value.
		Statute Tons.	Metric Tons.	£
	1899	1,130	1,148	486
	1900	1,732	1,759	804

Barbados.‡

The most important mineral product of the island is "manjak," a variety of glance pitch occurring in veins which traverse deposits of infusorial earth. The quantity exported in 1900 was 1,120 tons, valued at £6,162.

Petroleum has been discovered, and the value of the deposits is now being tested by bore-holes.

* *Statistics of Mineral Production in India in the ten years 1890 to 1900.* Calcutta, 1901, p. 2.

† Official Return furnished by the Colonial Secretary, Nassau; and Churchill "Bahamas." Report for 1900." *Colonial Reports—Annual*, No. 327.—London, 1901 [Cd. 431-19], p. 21.

‡ Hodgson, "Barbados. Report for 1900." *Colonial Reports—Annual*, No. 326.—London, 1901 [Cd. 431-18], p. 14.

According to Sir Godfrey Lagden,* "Coal crops out in several places in Basutoland, and is used for local consumption. . . . There are indications of iron, copper, and tin."

Bechuanaland Protectorate.†

Little is known about the mineral wealth of this country; though a small seam of good coal has been discovered close to the railway in the Northern Protectorate.

British Borneo.

LABUAN.

Coal is worked in the island of Labuan, and its harbour is now an important coaling station.

The quantities ‡ of coal exported in 1899 and 1900 were as follows:—

TABLE 289.

Year.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£
1899	32,567	33,090	Not stated.
1900	35,368	35,935	"

NORTH BORNEO.‡

The existence of coal, copper, gold, and other minerals has been proved; gold is worked by the natives in the vicinity of Darvel Bay. Coal has been discovered in the vicinity of Cowie Harbour and Marndu Bay. At the former place preliminary working operations have commenced.

SARAWAK.§

The known mineral resources of Sarawak are deposits of antimony ore, coal, diamonds, gold, and petroleum.

Antimony.—The Borneo Company has antimony works at Busoh in Upper Sarawak; 90 tons of regulus of antimony were shipped in 1900.

Coal.—The Government works two coal mines, one at Sadong, the other at Brooketon; the quantity exported in 1900 was 15,080 tons.

Diamonds.—The gems are found in very small quantities.

Gold.—Gold is being extracted from quartz. The mills at Bau and Bidi, belonging to the Borneo Company, Ltd., are now (1900) crushing between them about 15,000 tons a month, and all the gold is extracted by the cyanide process. The total output of the Borneo Company for the year 1900 was about 22,000 ozs. of fine gold.

* *Jour. R. Col. Inst.*, Vol. xxxii., 1901, p. 462.

† Newton, "Bechuanaland Protectorate Annual Reports for 1896-7." *Colonial Reports—Annual*, No. 226,—London, 1898 [C. 8650-24], p. 8.

‡ Information furnished by the British North Borneo Company.

§ Consul Hewett, "Trade and Commerce of Sarawak for the Year 1900."—*Dipl. and Cons. Reports*, No. 2711, Ann. Ser., 1901 [Cd. 786-15], p. 9, and information furnished by the Borneo Co., Ltd., and *The Sarawak Gazette*, Vol. xxxi., 1901, p. 78.

British Central Africa Protectorate.*

Promising auriferous quartz reefs have been discovered near the Loangwa River.

British Columbia. (See under CANADA.)

British Guiana.†

Diamonds.†—It has lately been discovered that some of the river beds in British Guiana are gem-bearing. The deposits are now being investigated by competent experts, and the diamonds may eventually prove a source of wealth to the Colony.

Gold.—Like the adjoining part of Venezuela, the British Colony is gold-bearing in many places ; the gold is obtained mainly from alluvial deposits, though much rich auriferous quartz exists. There has been little vein-mining up to the present time. The gold industry shows an increase of 1,313 ozs. during the year 1900–1901.

No dredging has as yet been undertaken, but a concession for working the bed of the Barima River by this method has been granted.

Geological surveys which have been made lately show that the gold-bearing parts of many of the rivers are much more extensive than was formerly supposed.

TABLE 290.

PERSONS EMPLOYED at MINES, ALLUVIAL WORKINGS, and QUARRIES during the Years 1899–1900 and 1900–1901.

	Kind of Workings.	1899–1900.	1900–1901.
	Mines and Alluvial or Placer diggings	6,500 (a)	5,530 (a)
	Granite Quarries... ..	90 (a)	86 (a)

(a) Approximate figures.

TABLE 291.

QUANTITY and VALUE of the MINERALS produced in 1899–1900 and 1900–1901.

Mineral.	Financial Year 1899–1900.			Financial Year 1900–1901.		
	Quantity.		Value.	Quantity.		Value.
Gold	Ozs.	Kilos.	£	Ozs.	Kilos.	£
	112,789	3,508	405,335	114,102	3,549	409,968
Granite... ..	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
	4,778	4,855	2,986	5,299	5,384	9,538
Total value	—	—	408,321	—	—	419,506

* Commissioner Sharpe, "Trade and General Condition of British Central Africa Protectorate for the Year 1900–1901."—*Dipl. and Cons. Reports*, No. 2722, Ann. Ser., 1901 [Cd. 786–26], p. 42.

† Official Return furnished by the Department of Mines, Georgetown, and : *British Guiana. Report of the Commissioner of Mines for the year 1899–1900.* Georgetown, Demarara, 1900.

† Perkins, *Report on visit to the Diamond Concession on the Mazaruni River*, Georgetown, 1900.

BRITISH GUIANA—*continued.*

The table below shows the output of the principal districts :—

TABLE 292.

Gold obtained.

District.					Financial Year 1899-1900.	Financial Year 1900-1901.
					Ozs.	Ozs.
Barima	...	...	...	...	16,389	17,356
Cuyuni	...	...	...	...	21,919	23,473
Essequebo	...	...	...	...	19,386	17,476
Potaro	...	...	...	...	29,765	26,563
Other districts	...	...	...	...	25,330	29,234
Total output in ozs.					112,789	114,102
" " kil.					3,508	3,549

TABLE 293.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1899-1900 and 1900-1901.

Kind of Workings.	1899-1900.		1900-1901.	
	Persons Killed.	Death-rate per 1,000 Persons employed.	Persons Killed.	Death-rate per 1,000 Persons employed.
Gold mines	—	—	6	1.08
Alluvial or Placer diggings	4	62		
Granite Quarries	—	—	—	—

British New Guinea.*

Many parts of British New Guinea are gold-bearing, but it is not likely that any large quantities of gold will be produced until the country has become more civilized. Nearly all the gold is obtained from alluvial deposits ; following the example of other colonies, it is proposed to introduce dredging machinery for the purpose of working some of the river beds.

TABLE 294.

Year.	Gold exported.		Value.
	Ozs.	Kil.	£
1898-99	12,012	374	44,185
1899-1900	9,256	288	32,478

* *Annual Reports on British New Guinea for 1898-99 and 1899-1900*, Brisbane, 1900 and 1901.

British Solomon Islands *

Copper ore has been found in the Protectorate.

Canada.†

Asbestos.—The Canadian asbestos, which mineralogically is chrysotile, occurs in small veins in serpentine in the Eastern Townships of the province of Quebec, and at Denholme mine north of Ottawa.

Chromic Iron Ore.—This ore is obtained from irregular pockets in the serpentine in the Eastern Townships of the province of Quebec.

Coal.—The coalfields, which have been most largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent, bituminous coal is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, and Springhill coalfields, in Nova Scotia. New Brunswick has a small area of thin seams of bituminous coal. The coal of the Pacific coast, generally bituminous, is of Cretaceous age, and is derived from collieries at Nanaimo, Wellington, and Comox, in Vancouver Island. Anthracite and bituminous coal occur in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams occurring near Cochrane improve in quality, and yield bituminous coal. Further west, again, is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of the Rocky Mountains, where the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal and semi-anthracite have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel is now being worked on a large scale. All these coals are of Cretaceous age.

In 1899 Nova Scotia produced 63·9 per cent. of the Dominion's output of coal, British Columbia 29·0 per cent., and the North-West Territories, together with New Brunswick, 7·1 per cent.

Copper.—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec. In the first of these provinces copper pyrites occurs in connexion with pyrrhotite and gold, especially at the rising town of Rossland, whose mines are already supplying large and important smelting works. More than half the Canadian copper now comes from British Columbia. The principal mines are Le Roi, War Eagle, and Centre Star.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the east for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metals are extracted.

Emery.—In the year 1897 large deposits of corundum were discovered near Raglan, in the counties of Hastings and Renfrew, in Eastern Ontario; the mineral is now being worked on a large scale for the purpose of making emery wheels, and Ontario is becoming one of the greatest corundum-producing countries in the world.

Gold.—At the present time the chief gold-producing provinces of the Dominion are the Yukon region of the North-West Territories, British Columbia, Nova Scotia, and Ontario.

The Klondike gold fields‡ in the Yukon District of the North-West Territories show an increase of 303,580 ozs., the total yield being 1,077,649 ozs., or more than four-fifths of the output of the Dominion. The gold was obtained solely from alluvial deposits.

* Woodford, "British Solomon Islands Annual Report for 1897-98." *Colonial Reports*—Annual, No. 251.—London, 1898 [C. 9046-19].

† Reports of the Division of Mineral Statistics and Mines of Canada for the years 1899 and 1900.

‡ For official information about Klondike, see: McConnell, "Preliminary Report on the Klondike Goldfields, Yukon District, Canada," *Geological Survey of Canada*. Ottawa, 1900.

CANADA—continued.

Next in importance is British Columbia, with a yield of 231,089 ozs. of gold in 1900. Its principal gold-mining regions are Kootenay, Cariboo, Omenica, and Cassiar. In the west are situated the important mines of Rossland, where the gold is found in connection with copper ore. The alluvial deposits which made the Cariboo district so famous about the year 1859 are very far from being exhausted, and are being worked by the hydraulic and other methods. Omenica and Cassiar form a link between Cariboo and Klondike.

Dredging the beds of rivers is being attempted in several places in the Province.

The gold of Nova Scotia is derived from free-milling quartz veins, and it is encouraging to note that the production of the province is increasing.

Ontario is not yet producing a large quantity of gold, though the labours of prospectors have proved the existence of auriferous veins over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east. The output from various stamp mills affords good grounds for believing that gold mining will become an important industry in Ontario.

Granite and Miscellaneous Building Stones.—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

Graphite.—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks. The greater part of the graphite raised in 1899 came from Black Donald Mine, Renfrew County, Ontario.

Gypsum.—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occur in the form of spotlessly white alabaster. A small amount of gypsum is being mined in Ontario.

Iron Ore.—Though endowed with large supplies of iron ore in many of its provinces, the Dominion of Canada is as yet a small producer, for its total output is considerably less than one-hundredth that of the United States.

Lead Ore.—The mineral resources of British Columbia are by no means confined to gold. This province is a large producer of argentiferous lead ore. The output of lead increased rapidly, especially in the Kootenay district, till 1897, but at the present time it is diminishing.

Mercury.—A little cinnabar was obtained in 1895, 1896, and 1897 from mines near Kamloops Lake, in British Columbia.

Mica.—This mineral is beginning to be mined more extensively in various places. The phlogopite and biotite varieties are obtained in the provinces of Ontario and Quebec, in the district about Ottawa, whilst transparent muscovite of excellent quality comes from Tête Jaune Cache, in British Columbia.

Natural Gas.—The Lower Silurian rocks, when buried, yield areas containing natural gas in a few places, such as at Port Colborne and Kingsville, in Southern Ontario. The natural gas which occurs in the North-West Territories has been little utilized at present.

Nickel.—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The output of nickel in 1900 was about five times that of the year 1890.

Ochre.—The most important ochre deposits are near Three Rivers, Champlain County, Quebec.

Petroleum.—The only district where petroleum is being produced at the present time is in Southern Ontario.

Phosphate of Lime.—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from the United States, prices have dropped, and practically none of the Canadian apatite mines are being worked as such. The phosphate appearing in the statistics was obtained as a by-product in mining for mica, or from the old waste heaps of abandoned workings.

Salt.—Thick beds of salt occur in Southern Ontario, in the Onondago division of the Silurian rocks. The brine is pumped up and evaporated.

CANADA—continued.

Silver.—The lead ores of British Columbia are often highly argentiferous.

The rich silver ores in the Thunder Bay district of the province of Ontario are not being largely worked at the present time.

Slate.—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.

TABLE 295.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1899 and 1900.*

Mineral or other product.	1899.†			1900.†		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.	\$	Statute Tons.	Metric Tons.	\$
Arsenic	51	52	1,001	271	275	4,670
Asbestos	22,800	23,166	99,832	27,358	27,797	156,869
Baryta	648	653	905	1,188	1,207	1,557
Coal	4,397,367	4,467,934	2,113,048	4,760,890	4,837,291	2,603,112
Coke	90,018	91,462	71,922	140,298	142,549	133,885
Copper (fine, contained in ore).	6,731	6,839	545,613	8,446	8,582	629,408
Felspar	2,679	2,722	1,233	—	—	—
Fireclay	535	543	266	1,112	1,130	849
Flagstones	—	—	1,562	—	—	1,079
Gold (Fine)	ozs. 1,028,620	kil. 31,894	4,368,819	ozs. 1,340,710§	kil. 41,700	5,695,223
Granite	11,980	12,172	18,605	—	—	16,438
Graphite	1,170	1,189	4,968	1,716	1,744	6,358
Gravel and Sand ...	216,473	219,947	20,885	—	—	—
Grindstones	4,028	4,092	8,890	4,954	5,033	10,983
Gypsum	218,362	221,866	52,876	225,001	228,612	53,221
Iron ore	66,622	67,691	49,126	—	—	—
" chromic	1,795	1,824	4,488	2,085	2,118	5,548
Iron (pig)	—	—	—	31,596	32,103	119,827
Lead	9,760	9,916	200,805	28,201	28,654	567,230
Limestone for flux in smelting iron ore.	46,273	47,016	9,100	47,291	48,050	8,082
Manganese ore ...	1,412	1,434	4,110	—	—	—
Mica	—	—	33,493	—	—	34,110
Mineral water ...	—	—	20,548	—	—	15,411
Natural gas	—	—	79,576	—	—	85,704
Nickel	2,564	2,605	424,899	3,161	3,212	683,776
Ochres	3,499	3,555	4,110	1,755	1,783	3,164
Petroleum	galls. 28,299,950	litres 128,579,634	246,990	galls. 24,867,430	litres 112,984,124	236,508
Phosphate of lime ...	2,679	2,722	3,699	1,263	1,283	1,460
Platinum	ozs. 55	kilos. 2	170	—	—	—
Pyrites (Copper and Iron).	24,721	25,117	22,756	35,742	36,316	31,883
Quartz	536	545	259	—	—	—
Salt	52,981	53,831	52,272	55,406	56,295	57,423
Sand (moulding) ...	12,251	12,450	5,636	—	—	—
Silver (Fine)	ozs. 3,411,644	kilos. 106,114	417,670	ozs. 4,446,505	kilos. 138,302	561,082
Slate	—	—	6,864	—	—	2,186
Soapstone	402	408	403	—	—	280
Talc	—	—	—	375	381	1,027
Tripolite	893	907	3,082	300	305	401
Zinc	363	369	9,617	95	97	1,920
Building materials :—						
Bricks	—	—	—	—	—	—
Building stone ...	—	—	—	—	—	—
Cement, natural ...	—	—	—	—	—	—
" Portland	—	—	—	—	—	—
Lime	—	—	1,216,458	—	—	1,271,259
Pottery	—	—	—	—	—	—
Sewer pipe	—	—	—	—	—	—
Terra cotta	—	—	—	—	—	—
Tiles	—	—	—	—	—	—
Total value	—	—	10,126,856	—	—	13,001,733

The progress of Canada as a mineral-producing country still continues ; the total value of its metallic and non-metallic products in 1900 exceeded 13 millions sterling ; 10 years ago the corresponding figure was \$14,013,913, about 3 millions.

* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1899 and 1900.

† Revised figures.

‡ Preliminary Return, subject to revision.

§ Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

CANADA—continued.

In 1900 gold contributed 43·8 per cent. of the total value ; coal, 20·9 per cent. ; copper, 4·8 per cent. ; nickel, 5·2 per cent.

The mining industries of some of the provinces of the Dominion are sufficiently important to deserve separate tables.

BRITISH COLUMBIA.*

TABLE 296.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.

KIND OF MINES.	1899.			1900.		
	Under-ground	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	2,773	965	3,738	3,186	910	4,096
Metalliferous ...	Not stated.	Not stated.	Not stated.	2,430†	1,309†	3,739†
Total	—	—	—	5,616	2,219	7,835

TABLE 297.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	1,294,182	1,314,900	797,753	1,439,595	1,462,697	887,423
Coke	34,251	34,801	55,189	85,149	86,515	87,482
Copper	3,448	3,503	277,696	4,463	4,535	331,909
Gold, Alluvial... ..	ozs. 67,245	kilos. 2,092	276,349	ozs. 63,936	kilos. 1,989	262,752
" from quartz veins, &c.	ozs. 138,815	kilos. 4,302	587,173	ozs. 167,153	kilos. 5,199	709,599
Lead	9,760	9,917	180,590	28,285	28,739	553,128
Silver	2,939,413	2,986,584	341,858	ozs. 3,958,175	kilos. 123,113	474,498
Other minerals	—	—	42,411	—	—	51,727
Total value	—	—	2,539,019	—	—	3,358,519

TABLE 298.

DEATHS from ACCIDENTS at COAL MINES during the Years 1899 and 1900.

Cause of Accident.	No. of Persons Killed.	
	1899.	1900.
<i>Underground:</i>		
Falls of coal	1	2
" rock	3	6
Explosion of gas	3	—
Crushed by cars	3	4
Blasting	—	1
Hoisting, ropes, &c....	—	1
<i>Surface:</i>		
Railways	1	—
Miscellaneous	—	3
Total	11	17

* Annual Reports of the Minister of Mines for British Columbia for 1899 and 1900. Victoria.

† The figures relate to Mines shipping ores.

CANADA.—BRITISH COLUMBIA—*continued.*

During the year 1900 there were 12 fatal accidents at metalliferous mines, causing 13 deaths.

TABLE 299.

DEATH-RATE FROM ACCIDENTS AT MINES during the Years 1899 and 1900.

KIND OF MINES.	1899.			1900.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	3.61	1.04	2.94	4.39	3.30	4.15
Metalliferous ...	—	—	—*	—	—	3.48†

At the Le Roi Mine, which employs 655 persons, there were four fatal accidents underground, causing four deaths; consequently the death-rate at this mine reached the terribly high figure of 6.11 per 1,000 in 1900.

NOVA SCOTIA.‡

Mines in Nova Scotia are regulated by two statutes, viz., "The Coal Mines Regulation Act," chapter 19 of the Revised Statutes, 1900, and "The Metalliferous Mines Regulation Act," chapter 20 of the Revised Statutes 1900.

TABLE 300.

PERSONS EMPLOYED at COAL MINES during the Years ended 30th September 1899 and 1900.

Year.	Under-ground.			Above-ground.			Construction.			Total.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1899	3,531	555	4,086	1,234	180	1,414	105	7	112	5,612
1900	3,949	593	4,542	1,494	201	1,695	386	3	389	6,626

The average numbers of persons employed at gold mines during the years ending 30th September 1899 and 1900 were 531 and 537 respectively.

TABLE 301.

QUANTITY of MINERALS produced during the Years ended 30th September 1899 and 1900.

Mineral.	Year ending 30th September 1899.		Year ending 30th September 1900.	
	Quantity.		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Barytes	335	340	783	796
Coal	2,642,333	2,684,736	3,238,245	3,290,211
Coke	55,484	56,374	62,000	62,995
Copper ore	400	406	600	610
Gold	ozs. 27,772	kilos. 864	ozs. 30,399	kilos. 945
Gypsum (exported) ..	140,000	142,247	122,281	124,243
Iron ore	16,169	16,428	15,507	15,756
Limestone	32,000	32,514	50,000	50,802
Manganese ore	100	102	8	8
Tripoli and Silica ...	893	907	1,100	1,118

* This death-rate cannot be calculated as the number of persons employed is not stated.

† Calculated on the number of persons employed at mines shipping ore.

‡ Reports of the Department of Mines for Nova Scotia, 1899 and 1900, Halifax.

CANADA.—NOVA SCOTIA—*continued.*

TABLE 302.

DEATHS from ACCIDENTS at MINES during the Years ended 30th September 1899 and 1900.

Year.	Kind of Mines.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
1899 ...	Coal	19	3.39
	Gold	not stated	—
1900 ...	Coal	22	3.32
	Gold	—	—

ONTARIO.*

TABLE 303.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1899 and 1900

Kind of Working.	1899.	1900.†
Copper and nickel	839	
Gold	611	
Iron ore	87	
Silver	40	
Other workings	8,426	
Total	10,003	

TABLE 304.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.

Mineral or other Product.	1899.			1900.†		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	\$	Statute Tons.	Metric Tons.	\$
Arsenic	51	52	995			
Calcium carbide	950	965	15,345			
Copper	2,530	2,571	36,213			
Gold... ..	oss. 37,727	kilos. 1,173	87,119			
Graphite	1,089	1,106	3,324			
Gypsum	1,071	1,088	3,393			
Iron ore	15,099	15,341	6,360			
Mica	237	241	7,808			
Natural gas	—	—	90,597			
Nickel	2,564	2,605	108,104			
Petroleum (crude)... ..	galls. 23,615,967	litres 107,298,154	359,045†			
Salt	50,335	51,143	65,222			
Silver	oss. 105,467	kilos. 3,280	13,474			
Talc	89	90	103			
Zinc	1,071	1,088	4,932			
Building materials:—						
Bricks, tiles, pipes, &c.	—	—	398,816			
Building stone, &c.	—	—	213,976			
Cement, Portland	barrels 222,550	—	91,286			
" rock	139,487	—	24,049			
Lime	bushels 4,342,500	decalitres 15,783,971	109,932			
Total value	—	—	1,640,087			

* Reports of the Bureau of Mines for Ontario for 1899, Toronto.

† Figures for 1900 are not yet available.

‡ Value of illuminating and lubricating oils, benzine, naphtha, gas and fuel oils, tar, paraffin wax and candles made from the crude oil; value of crude oil not stated.

CANADA.—ONTARIO—*continued.*

TABLE 305.

NUMBER of DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.

Kind of Mine.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1899.	1900.*	1899.	1900.*
Copper	3		3.58	
Gold	11		18.00	

QUEBEC.†

This Province employed in 1900 about 5,400 persons in mining and quarrying, of whom nearly one-fifth were engaged in getting asbestos, the most important mineral.

TABLE 306.

OUTPUT and VALUE of MINERALS during the Years 1899 and 1900.

Mineral.	1899			1900.		
	Statute Tons.	Metric Tons.	Value.	Statute Tons.	Metric Tons.	Value.
Asbestos	20,773	21,106	£ 123,028	26,199	26,619	£ 151,102
Barytes	371	377	598	411	417	662
Chrome iron	1,768	1,796	4,288	2,068	2,101	17,147
Copper ore	39,028	39,654	33,300	33,742	34,283	30,853
Felspar	2,679	2,722	1,541	131	133	91
Flagstones	sq. yds. 4,000	sq. metres 3,344	719	sq. yds. 4,000	sq. metres 3,344	719
Gold	ozs. 272	kilos. 8	1,010	—	—	—
Graphite	54	55	1,048	358	364	1,945
Iron ores	20,000	20,321	8,219	18,736	19,037	7,859
Lead ore	350	356	2,517	286	290	17,955
Mica	510	518	28,123	493	440	33,616
Ochre	1,277	1,297	2,938	1,055	1,072	1,911
Phosphate	1,138	1,156	1,882	1,223	1,243	1,829
Slate	2,021	2,053	6,189	817	830	2,062
Building materials... ..	—	—	213,080	—	—	20,871
Total value	—	—	428,480	—	—	288,642

* Figures for 1900 are not yet available.

† Obalski, *Reports on the Mines of the Province of Quebec for the years 1899 and 1900*, Department of Colonization and Mines, Quebec, 1900 and 1901.

Cape Colony.*

Though the diamond industry overshadows all other kinds of mining in the Colony, the extraction of coal is gradually assuming more importance, whilst copper ore has long been a notable article of export.

Asbestos.—This mineral occurs in the form of narrow veins, from one to five inches wide, in a dark shale at Westerberg, in the Prieska district, and Koegas, in the Hay district.

Coal.—As shown by Table 308, the total output of coal now reaches more than 200,000 tons a year. Of this amount, Indwe produced more than five-eighths; the rest came from collieries at Cyphergat, Sterkstroom, Molteno, &c.

Copper Ore.—Namaqualand produces all the copper ore; apparently the copper mines are not under official inspection.

Crocidolite.—Small quantities of this mineral, which is used for ornaments and as a jewel, are obtained in the district of Hay and other places.

Diamonds.—The gems are obtained mainly from open and underground workings in the solid rock near Kimberley, and to a small extent from alluvial diggings. The three principal mines worked at the present time are De Beers, Kimberley, and Premier (Wesselton). The siege of Kimberley, and the war generally, interfered greatly with mining, and the output of the gems in 1900 fell considerably.

In addition to the Kimberley mines, there are a few unimportant diamond mines in the Barkly West Division, besides alluvial diggings.

Salt.—Salt pans are found in 18 divisions of the Colony, the largest being in Kimberley, Port Elizabeth, Uitenhage, Malmesbury, Piquetberg, and Cradock.

TABLE 307.

PERSONS EMPLOYED † during the Years 1899 and 1900.

Class of Mine.	Under-ground.			Above-ground.			Total for 1900.			Total for 1899.
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.	
Coal ...	98	2,553	2,651	73	733 †	806	171	3,286	3,457	2,986
Copper Ore...	—	—	—	—	—	—	272	1,694	1,966	1,790
Diamond ...	347	2,274	2,621	1,510	5,091	6,601	1,857	7,365	9,222 §	12,679 §

* *Statistical Registers* for 1899 and 1900, Cape Town, *Reports of the Inspector of Mines for Kimberley, &c., for 1900* Cape Town, and Chalmers' "Notes on the Namaqualand Copper District," *Trans. Inst. Min. and Met.*, 1900.

† Exclusive of a few persons employed in getting asbestos and salt.

‡ 809 of these persons were females employed above-ground.

§ These figures relate to Kimberley mines only.

CAPE COLONY—continued.

TABLE 308.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos (exported)	—	—	—	155	157	2,557
Coal	186,899	189,289	133,650	198,451	201,636	152,581
Copper ore	34,848	35,407	526,044*	42,678	43,363	562,115*
Orocidolite (exported)	18	18	397	5	5	500
Diamonds	carats 2,507,647	kilos. 515	9,826,631	carats 1,844,841	kilos. 378	3,365,994
Fireclay	1,260	1,280	Not stated.	1,090	1,107	Not stated.
Gold	oss. 130	kilos. 4	454	oss. 126	kilos. 4	492
Salt, white	bushels 484,800 tons 11,633†	11,820	24,880*	bushels 484,695 tons 11,646†	11,833	31,660*
Total value	—	—	4,512,056	—	—	4,115,899

TABLE 309.

DEATHS from ACCIDENTS at COAL and DIAMOND MINES during the Year 1900.

Class of Mine.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	8	3	11	3.02	3.72	3.18
Diamond (Kimberley Mines)	8	13	21	4.07	2.62	3.04
Total for Coal and Diamond Mines for 1900.	16	16	32	3.03	2.16	2.52
Total for preceding year...	57	15	72	8.00	1.76	4.60

Kimberley Diamond Mines.‡

TABLE 310.

PERSONS EMPLOYED during the Years 1899 and 1900.

Year.	Under-ground.			Above-ground.			Total.		
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.
1899 ...	399	4,177	4,576	1,529	6,574	8,103	1,928	10,751	12,679
1900 ...	347	2,274	2,621	1,510	5,091	6,601	1,857	7,365	9,222

* Estimated on the export value.

† Estimated at 60 lbs. = 1 bushel.

‡ Reports of the Inspector of Mines for Kimberley, &c., for 1899 and 1900, Cape Town.

CAPE COLONY—continued.

Kimberley Diamond Mines—continued.

TABLE 311.

DEATHS from ACCIDENTS during the Years 1899 and 1900.

Year.	Place.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
1899 ...	Under-ground ...	2	48	50	5·01	11·49	10·93
	Above-ground ...	—	15	15	—	2·28	1·85
	Total... ..	2	63	65	1·04	5·86	5·13
1900 ...	Under-ground ...	1	7	8	3·84	4·10	4·07
	Above-ground ...	1	12	13	·88	3·14	2·62
	Total... ..	2	19	21	1·44	3·44	3·04

TABLE 312.

CAUSES of ACCIDENTS in 1899.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes... ..	2	—	7	7	—	—	—
Falls of ground	33	1	7	8	2	24	26
Falling down “ passes ”	2	—	2	2	—	—	—
Machinery	1	—	1	1	—	—	—
Falls from ladders... ..	5	—	—	—	—	5	5
Ignition of gas	2	—	—	—	2	—	2
Ground falling from side of shaft	1	—	1	1	—	1	1
On tramways or by trucks ...	9	—	—	—	1	8	9
Blasting	4	1	30	31	10	20	30
Miscellaneous	1	—	—	—	1	—	1
Total under-ground ...	60	2	48	50	16	58	74

CAPE COLONY—continued.

Kimberley Diamond Mines—continued.

Table 312—continued.

CAUSES of ACCIDENTS in 1899—continued.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Surface and Open Works.</i>							
Falling down open works ...	2	—	1	1	1	—	1
Falls of ground and débris ...	31	—	9	9	—	24	24
On tramways or by trucks ...	39	—	2	2	3	36	39
Machinery	10	—	2	2	1	7	8
Blasting	6	—	1	1	2	5	7
Miscellaneous	6	—	—	—	—	7	7
Total	94	—	15	15	7	79	86
Totals (under and above ground)	154	2	63	65	23	137	160

TABLE 312—continued.

CAUSES of ACCIDENTS in 1900.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Falls of ground	18	—	4	4	—	14	14
Falling down "passes"	2	—	1	1	—	1	1
Falls from ladder	1	—	—	—	—	1	1
Whilst ascending or descending shafts by machinery.	2	—	1	1	—	1	1
On tramways or by trucks ...	2	—	—	—	—	2	2
Ground falling down shaft ...	1	—	—	—	—	1	1
Timber falling down shaft ...	1	—	—	—	—	1	1
Falling down shafts	2	—	1	1	1	—	1
Blasting	3	1	—	1	—	2	2
Total	32	1	7	8	1	23	24
<i>Surface and Open Works.</i>							
Falls of ground and débris ...	16	—	6	6	—	13	13
On tramways or by trucks ...	28	1	3	4	2	24	26
Falling from face of open works...	2	—	1	1	—	1	1
Machinery	3	—	2	2	—	1	1
Blasting	3	—	—	—	1	2	3
Miscellaneous	2	—	—	—	2	—	2
Total	54	1	12	13	5	41	46
Totals (under and above ground)	86	2	19	21	6	64	70

Ceylon.*

Plumbago is the most important mineral produced in Ceylon ; it occurs in gneiss and mica schist, and the workings are sometimes carried on to a depth of from 150 to 200 yards.

The diggings for precious stones, such as rubies, sapphires, spinels, chrysoberyls, garnets, zircons, and moonstones, are not very important.

The salt is obtained from salt lagoons or " pans."

" Cabook " is a local name for laterite, the most useful building stone in the island.

TABLE 313.

PERSONS EMPLOYED† at MINES and MINERAL WORKINGS during the Years 1898 and 1899.

Kind of Workings.	Under-ground.			Above-ground.			Total Number of Persons Employed in Mines and Mineral Workings.
	Males.	Females.	Total.	Males.	Females.	Total.	
Mines	18,372	2	18,374	29,476	8,965	38,441	56,815
Mineral Workings other than Mines.	18,591	3,271	21,862	104,569	6,684	111,253	133,115
Total for 1899 ...	36,963	3,273	40,236	134,045	15,649	149,694	189,980†
Total for preceding year.	105,591	337	105,928	158,551	25,503	184,054	289,982‡

TABLE 314.

QUANTITY and VALUE of the MINERALS produced during the Years 1899 and 1900.||

Mineral.	1899.			1900.||		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Coral and rubble stones ...	35,000	35,762	292			
Grinding stones	—	—	450			
Mica	—	—	489			
Plumbago	28,578	29,037	580,994			
Precious stones and pearls ...	—	—	883			
Salt	4,973	5,053	7,888			
Stone :— " Cabook "	cubes 2,734,634	—	6,475			
Gneiss	6,462	6,566	(Not stated.)			
Granite and gravel	cubes 572,509	—	290,000			
Total value	—	—	886,921§			

* Official Return furnished by the Government of Ceylon.

† The numbers in this official return must not be taken to represent the numbers continuously employed in the industry they probably include very many persons who worked at plumbago mining or cleaning for a few weeks only in the year.

‡ Amended figures furnished by the Government of Ceylon.

§ Excluding value of Gneiss.

|| Figures for 1900 are not yet available.

CEYLON—continued.

TABLE 315.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS during the Years 1898 and 1899.

Kind of Workings.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	22	1	23	5	—	5	28	1·25	·13	·49
Openworks...	—	—	—	2	—	2	2	—	·02	·02
Total for 1899.	22	1	23	7	—	7	30	·57	·05	·16
Total for pre- ceding year.	6	—	6	3	1	4	10	·06	·02	·03

Channel Islands.

The average number of persons employed each year in the stone quarrying industry of the Channel Islands is about 1,200.

TABLE 316.

QUANTITY and VALUE of STONE exported during the Years 1899 and 1900.*

Mineral and Islands where obtained.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
Guernsey and Jersey : Stone, dressed or rough (exported).	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
	319,861	324,994	177,331	344,054	349,575	196,631

Christmas Island.†

This island possesses deposits of phosphate of lime which are rich enough to be of economic value. The phosphatic rock now being worked on a large scale is, in part at all events, a limestone altered into phosphorite by the percolation from overlying guano. Between five and six hundred persons are employed by the Phosphate Company, and the shipments for 1900 are estimated at 37,000 tons. It is expected that the shipments in 1901 will approach 200,000 tons.

* Annual Statement of Trade of the United Kingdom for 1900, p. 349.

† Clayton "Christmas Island Report for 1900." Colonial Report, Annual, No. 319 [Cd.—431— 11] London, 1901.

YEAR 1900.]

327

[CYPRUS.]

[FEDERATED MALAY STATES.]

Cyprus.*

TABLE 317.

QUANTITY and VALUE of the MINERALS produced during the Years 1898 and 1899.

Minerals.	1898.			1899.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Copper (exported)	22	22	497	35	36	1,273
Gypsum	3,930	3,993	1,822	5,509	5,597	2,671
Salt (collected) ...	(a)	—	—	3,125	3,175	4,303
Umber (exported)	980	996	502	3,241	3,293	1,673
Total value ...	—	—	2,821	—	—	9,920

(a) No salt was collected in 1898.

In addition to these minerals, sandstone and limestone are quarried for building and other purposes ; but the quantities are unknown.

Federated Malay States.†

Gold.—Pahang has several mines which are working quartz veins ; by far the most important is the Raub Concession, which has yielded about 12,000 ozs. of gold annually—since 1897.

Marble.—A marble quarry is being worked at Ipoh, in Perak.

Tin.—The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The ore is obtained almost exclusively from alluvial deposits worked partly by the open quarry method and partly by true underground mining.

The output of Perak‡ rose a little in 1900, and the total quantity of metallic tin exported was 21,166 tons against 18,960 tons in 1899.

Hydraulic mining has been largely introduced for the purpose of working tin deposits in the Kinta district of Perak, and near Seremban in Negri Sembilan. There were 9 monitors at work in Perak in 1900, and this number is likely soon to be doubled.

A certain amount of vein mining is being carried on, and it is said that dredging the river beds will be tried before long.

The total number of coolies employed at the mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1900 amounted to 168,000.

TABLE 318.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.

State.				1899.	1900.
Negri Sembilan	...	...	...	18,442	21,459
Pahang	...	...	...	2,000§	7,578§
Perak	...	...	...	45,468||	70,963
Selangor	...	...	...	65,052	68,000
Total	...	...	...	130,962	168,000

* *Blue Books for Cyprus for 1898-9 and 1899-1900.* Bellamy, "A description of the Salt-Lake of Larnaca in the Island of Cyprus." *Quart. Journ. Geol. Soc.*, Vol. LVI., 1900, p. 745.

† Official Return furnished by the Mines Department, Seremban, Negri Sembilan. *Report by the Acting Resident-General of the Federated Malay States*, Kuala Lumpur, 1901 ; and Stephens, "Mineral Features of Pahang, Malay Peninsula." *Trans Inst. Min. and Met.*, Vol. IX., 1901.

‡ *Perak Administration Report for the year 1900*, p. 7. Supplement to the *Perak Government Gazette*, Taiping, 5 July, 1901.

§ Estimated.

|| Kinta District only.

FEDERATED MALAY STATES—continued.

TABLE 319.

SUMMARY of QUANTITY and VALUE of MINERALS produced in the four States during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold	oss. 18,295	kilos. 569	70,000	oss. 17,048	kilos. 530	65,229
Tin*	38,353	38,969	4,482,941	42,442	43,123	5,500,000
Wolfram (exported)	2	2	76	—	—	—

TABLE 320.

NEGRI SEMBILAN.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin*	3,410	3,465	411,260	4,300	4,369	557,231
Wolfram (exported)	2	2	76	—	—	—

TABLE 321.

PAHANG.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold	oss. 18,295	kilos. 569	70,000	oss. 17,048	kilos. 530	65,229
Tin*	803	816	93,231	935	950	121,165

TABLE 322.

PERAK.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin*	18,960	19,264	2,237,765	21,166	21,506	2,742,873

* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported or smelted at Singapore and elsewhere.

FEDERATED MALAY STATES—continued.

TABLE 323.

SELANGOR.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin*	15,180	15,424	1,740,685	16,041	16,298	2,078,781

TABLE 324.

[DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.

State.	Number of persons killed.		Death-rate per 1,000 persons employed.	
	1899.	1900§.	1899.	1900§.
Negri Sembilan	6		·83	
Pahang	†		†	
Perak	†		†	
Selangor... ..	16		·25	
Total	22†		·26†	

Gold Coast.||

The name of the Colony points to its mineral resources. The principal gold mines are situated in Wassaw and Appolonia in the Western District. The rules relating to prospecting and obtaining concessions in the Colony are contained in a Blue Book¶ published this year.

The ores of silver, mercury, lead, tin, copper, and iron have been found, and quarries of sandstone abound throughout the settlement.

TABLE 325.

PERSONS EMPLOYED at GOLD MINES during the Year 1898.

Under-ground.	Above-ground.			Total.
	Males.	Females.	Total.	
881	1,811	221	2,032	2,913

* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

† Not ascertainable.

‡ Excluding Pahang and Perak.

§ Figures not yet available.

¶ Official Return furnished by the Colonial Secretary of Gold Coast Colony, *Blue Books for Gold Coast for 1898 and 1899*.—Smith, "Gold Coast Annual Report for 1897," *Colonial Reports*, Annual, No. 249, London, 1898 [C. 9406-17], p. 13 and No. 271 [C. 9498-5], 1899, p. 12.—Irvine, "The Gold Mines of West Africa," *Jour. Soc. Arts.*, Vol. XLVII., p. 305.

¶ *Gold Coast.—Laws and Regulations affecting Lands and Mines and the Labour of Natives*, 1901, London, 1901 [Cd. 575].

GOLD COAST—*continued.*

The quantity and value of gold exported in 1899 and in 1900 were as follows :—

TABLE 326.

Metal.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Ozs.	Kilos.	£	Ozs.	Kilos.	£
Gold	14,250	443	51,300	12,774	397	51,062

The amount of gold obtained from the mines which furnished the returns of persons employed was 10,458 ozs., worth £41,042.

TABLE 327.

DEATHS FROM ACCIDENTS at GOLD MINES during the Year 1898.

Under-ground.	Above-ground.	Total.	Death-rate per 1,000 persons employed.		
			Under-ground.	Above-ground.	Total.
1	—	1	1·13	—	·34

India.*

The three most important minerals worked are :—coal, gold ore, and salt.

Coal.—The total output of coal in 1900 was 6,118,692 tons. About three-quarters of the coal produced in India comes from Bengal; the remainder is obtained from the North-West Provinces and Oudh, Punjab, Central Provinces, Assam, Burma, Central India, the Nizám's Dominions, and Baluchistan.

The resources of India as a coal-producing country are immense, very large areas, rich in mineral fuel, have not yet been touched. The principal coal mines are in the following districts :—Raniganj in Bengal, Singareni in the Nizám's Territory, Lakhimpur in Upper Assam, Mohpani and Warora in the Central Provinces, and at Umaria in the Central Indian Agency.

The output of coal in India is increasing rapidly, and very nearly suffices to supply the wants of the country. The imports of coal (mainly British) amount only to 333,000 tons annually.

Cobalt.—In his report for 1896 Mr. Grundy, the Government Inspector of Mines, states that cobalt mining is an industry of some importance in Jeypore.

Gems and Precious Stones.—Upper Burma has long been famous for its rubies, and the mining industry has just entered the profitable stage. In addition, Upper Burma yields amber, jade, and tourmaline. The output of diamonds from Bundelkhand, Central India, is insignificant.

Gold.—The most important mineral industry in India is gold mining; small quantities of the precious metal are washed from river sands in very many parts of the country, but the total amount so obtained is insignificant with the output of the quartz veins of Mysore.† The value of the gold obtained is nearly double that of the coal.

The 14 gold mines at work in 1899 employed 21,093 persons, of whom 12,030 worked under-ground. The gold produced in 1899 was 446,397 ounces (13,885 kilos.), of which more than one-third came from the Mysore Gold Mine, and more than one-third from the Champion Reef Gold Mine. In the year 1900 there were 24,587 persons employed at the Mysore Mines, and the output was 509,553 oz. of gold.

Iron.—The various ores of iron, viz., magnetite, hematite, limonite, and claystone, occur abundantly, and are smelted on a small scale by the aid of charcoal all over India.

* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India, 1891 to 1900*. Calcutta, 1901; India Office, *Statement exhibiting the moral and material progress and condition of India during the year 1898-99*. London, 1900; and Blyth, *Notes on the collection exhibited by the Geological Survey of India*. Paris, 1900.

† Smeeth, *Report of the Chief Inspector of Mines in Mysore for the year 1899*. Mysore Geological Department. Madras, 1901; and Hatch, "The Kolar Gold-field." *Memoirs Geol. Survey of India*. Vol. XXXIII. Calcutta, 1901.

INDIA—continued.

Barrakar, in Bengal, is the only place where iron-smelting is carried on by modern methods on a comparatively large scale. The output in 1899 was 19,631 tons of pig iron. At Barrakar the conditions are extremely favourable, for coal, iron ore, and limestone are found in close proximity.

Manganese Ore.—The chief deposits of manganese ore are near Jabalpur, in the Central Provinces, and in the Vizagapatam district, Madras.

Mica.—Quarrying mica is confined chiefly to the provinces of Bengal and Madras.

Petroleum.—The oil wells in Upper Burma, where petroleum has been obtained for more than 2,000 years, furnish most of this mineral; the output of Assam is comparatively small.

Salt.—The sources of the salt supply are: (a) rock-salt mines of the Punjab, Kohat, and Mandi State; (b) lakes and wells of Rajputana, wells of the Punjab, and Upper Burma; (c) evaporation of sea water in Bombay, Sind, Madras, and Lower Burma.

*Saltpetre.**—The nitre of India is obtained from a natural efflorescence from the soil, especially in the province of Bihar. The crude earth is purified by solution, filtration, evaporation, and crystallization.

The area over which saltpetre is manufactured is estimated at 232,314 square miles; and according to the census of 1891 there were 119,558 saltpetre workers and sellers in India.

According to the Official Statistical Department† the output given on page 332 is too low, for on an average 20,000 tons of saltpetre are exported annually from Calcutta.

Slate—This mineral is quarried at Monghyr, Bengal, and in the Kangra Valley, Rewari, Punjab. It is used for roofing, paving, &c.

Soda Salts.—The carbonate and the sulphate of soda are manufactured in very many districts of India from the surface soil or from saline efflorescences, in like manner to saltpetre.

TABLE 328.

PERSONS EMPLOYED in and about MINES in INDIA for the Years ending 31st December 1899 and 1900.‡

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1899.							
Coal	38,894	12,789	51,683	14,669	7,933	22,602	74,285
Gold	13,230	—	13,230	8,981	1,835	10,816	24,046
Manganese Ore	—	—	—	2,917	1,863	4,780	4,780
Mica	2,154	202	2,356	4,649	4,261	8,910	11,266¶
Plumbago	240	—	240	459	362	821	1,061
Salt	787	588	1,375	98	10	108	1,483
Stone, &c.	30	7	37	1,191	802	1,993	2,030
Total	55,335	13,586	68,921	32,964	17,066	50,030	118,951¶
1900.							
Coal	44,463	17,206	61,669	18,338	10,402	28,740	90,409
Corundum	100	100	200	—	—	—	200
Gold	13,413	—	13,413	9,906	1,707	11,613	25,026§
Iron ore	—	—	—	—	—	—	—
Magnesite	—	—	—	20	60	80	80
Manganese ore	—	—	—	2,538	1,701	4,242	4,242
Mica	2,494	2,100	4,594	3,553	1,370	4,923	9,517¶
Plumbago	283	—	283	448	211	659	942
Rubies, sapphires, spinels, and garnets	—	—	—	1,177	—	1,177	1,177
Salt	746	550	1,296	151	—	151	1,447
Slate, &c.	—	—	—	88	—	88	88¶
Total	61,499	19,956	81,455	36,219	15,454	51,673	133,128¶

* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 54.

† *Ibid.* p. i.

‡ Official Return furnished by Mr. James Grundy, the Inspector of Mines in India, and Mr. G. A. Stonier, Provisional Chief Inspector of Mines in India.

§ Excluding persons employed at alluvial gold mining in Burma.

¶ No returns about 63,000 tons mined.

¶ Returns incomplete.

INDIA—continued.

TABLE 329.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1899 and 1900.*

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value
	Statute Tons.	Metric Tons.	Rs.	Statute Tons.	Metric Tons.	Rs.
Alum	3½	3½	469	(Not stated)	—	(Not stated)
Amber	cwt. 20	kilos. 1,016	2,270	cwt. 9	kilos. 457	1,540
Asbestos	cwt. 1	kilos. 51	8	cwt. 1	kilos. 51	8
Clay	2,047,134	2,079,988	2,005,415	3,093,988	3,143,639	4,126,660
Do.	900	914	(Not stated)	500	508	(Not stated)
Do.	(Not stated)	—	29,890	(Not stated)	—	28,208
Coal	5,093,260	5,174,985	15,957,301	6,118,692	6,216,882	20,146,222
Copper ore	51	52	1,025	76	77	244
Corundum	104	106	4,816	69	70	3,382
Do.	134	138	(Not stated)	—	—	—
Do.	(Not stated)	—	230	—	—	—
Diamonds	carats 124	grams 25	8,011	carats 169	grams 34	11,372
Garnets	cwt. 1,251	kilos. 63,554	50,000	cwt. 1,251	kilos. 63,554	50,000
Gold	oss. 456,020	kilos. 14,184	25,873,591	oss. 513,266	kilos. 15,904	28,377,063
Granite	796,115	808,891	534,623	361,486	367,287	288,081
Do.	2,094	2,128	(Not stated)	1,449	1,472	(Not stated)
Gravel and rubble	64,967	66,010	42,730	167,389	170,075	95,818
Gypsum	6,448	6,546	2,370	4,345	4,415	1,698
Iron ore	61,532	62,519	190,917	63,073	64,085	165,924
Do.	(Not stated)	—	1,610	(Not stated)	—	1,643
Jade	56	57	42,048	89	90	163,396
Laterite	5,942,543	6,037,907	1,911,604	556,304	565,231	589,035
Limestone	2,150,021	2,184,524	1,488,531	1,182,892	1,201,875	760,408
Magnesite	—	—	—	225§	—	(Not stated)
Manganese ore	87,126	88,524	261,378	130,670†	132,767	1,700,139
Mica	620‡	630	909,504	916§	931	885,669‡
Petroleum	gals. 32,934,007	litres 149,634,277	1,885,259	gals. 37,729,211	litres 171,421,056	2,231,325
Plumbago	1,524	1,548	23,300†	1,829§	1,858	(Not stated)
Rubies	(Not stated)	—	1,363,972	(Not stated)	—	1,459,898
Salt	920,669	935,444	4,424,999	1,005,293	1,021,426	4,585,454
Saltpetre	11,218	11,398	1,635,465	11,524†	11,709	1,629,657
Sandstone	948,993	964,222	533,387	389,180	395,425	430,649
Do.	115,140	116,988	(Not stated)	5,037	5,118	325‡
Slate	25,948	26,364	53,436	cubic ft. 5,191	cubic metres 147	27,674
Do.	9	9	(Not stated)	7,225	7,341	(Not stated)
Soapstone	181	184	295	34	35	230
Scapstone	3,407	3,462	29,738	111	113	30,029
Do.	116	118	(Not stated)	2,302	2,339	(Not stated)
Do.	(Not stated)	—	130	82	83	(Not stated)
Stone, miscellaneous	262,301	266,510	170,866	(Not stated)	—	81
Do. do.	cubic ft. 44,121	cubic metres 1,249	3,592	264,906	269,157	206,972
Tin ore	71	72	118,495	(Not stated)	—	5,267
Trap	353,065	358,731	212,060	104	106	123,009
Tourmaline	—	—	—	744,346	756,291	143,951
				lbs. 73	kilos. 33	18,600

* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India 1891 to 1900*, Calcutta, 1901.

† Exported.

‡ Incomplete.

§ This quantity has been taken from the Report of the Inspector of Mines for 1900.

¶ Value estimated.

[INDIA—continued.

OUTPUT and VALUE of MINERALS, classified according to PROVINCES or STATES, for 1
Years 1899 and 1900—continued.

Mineral and Province or State where wrought.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
INDIA—cont.						
Madras.	Statute Tons.	Metric Tons.	Rupees.	Statute Tons.	Metric Tons.	Rupees.
Clay	620,228	630,181	801,432	—	—	—
Corundum	60	61	2,258	—	—	—
Gold	oss. 325	kilos. 10	18,920	oss. 4	—	25
Granite	530,223	538,732	120,244	—	—	—
Iron ore	1,149	1,167	2,890	992	1,008	1,927
Laterite	5,492,151	5,580,288	1,402,742	—	—	—
Limestone	693,369	704,496	495,172	—	—	—
Magnesite	—	—	—	225†	229	(Not stated)
Manganese ore	87,126	88,524	261,378	100,770*	102,387	803,139
Mica	262	266	602,304	487†	495	(Not stated)
Plumbago	1,521	1,545	23,300	400†	406	—
Salt	268,962	273,278	1,443,820	322,210	327,381	1,702,830
Saltpetre	2,028	2,061	198,050	1,831	1,860	203,552
Sandstone	630,763	640,885	117,613	—	—	—
Slate	6,982	7,094	15,600	—	—	—
Soapstone	103	105	4,900	—	—	—
Stone, miscellaneous	70,194	71,320	8,604	—	—	—
Trap	7,205	7,321	592	—	—	—
Total value in Rupees ...	—	—	5,519,819	—	—	—
" " in £ sterling	—	—	£367,988	—	—	—
N.W. Provinces and Oudh.						
Granite	2,094	2,128	(Not stated)	1,449	1,472	(Not stated)
Iron ore	—	—	—	10	10	63
Limestone	908,216	922,791	329,766	798,151	810,959	297,600
Sandstone	101,404	103,031	(Not stated)	150,764	153,173	151,060
Slate	9	9	—	34	35	(Not stated)
Soapstone	†	—	†	†	—	†
Bombay, including Sindh.						
Salt	379,550	385,641	1,291,542	471,048	478,607	1,486,577
Total value in Rupees ...	—	—	1,291,542	—	—	1,486,577
" " in £ sterling	—	—	£86,108	—	—	£99,106
Burma.						
Amber	cwt. 20	kilos. 1,016	2,270	cwt. 9	kilos. 457	1,540
Clay	975,265	990,916	785,220	820,040	833,210	754,976
Coal	8,105	8,235	52,682	10,228	10,390	76,710
Gold	oss. 1,198	kilos. 37	65,798	oss. 1,236	kilos. 38	49,906
Granite... ..	4,663	4,738	6,257	24,798	25,196	29,609
Gravel and rubble	17,967	18,255	10,730	23,389	23,764	15,818
Iron ore	180	183	791	—	—	—
Jade	56	57	42,048	89	90	163,390
Laterite	168,388	171,090	315,853	201,127	204,355	374,800
Limestone	17,196	17,472	64,081	18,432	18,728	55,740
Petroleum	gals. 32,309,531	litres 146,796,997	1,819,307	gals. 36,974,288	litres 167,991,125	2,151,660
Plumbago	3	3	(Not stated)	—	—	—
Rubies	(Not stated)	—	1,363,972	(Not stated)	—	1,459,890
Salt	23,240	23,613	795,863	21,141	21,480	755,170
Sandstone	24,997	25,398	60,915	33,359	33,894	87,900
Soapstone	9	9	2,200	51	52	10,130
Soapsand	181	184	295	111	113	230
Tin ore... ..	71	72	118,495	104	106	128,000
Tourmaline	—	—	—	lbs. 73	kilos. 33	18,600
Total value in Rupees ...	—	—	—	—	—	6,134,190
" " in £ sterling	—	—	—	—	—	£408,940

* Exported.

† This quantity has been taken from the Report of the Inspector of Mines for 1900.

‡ Included with Bengal.

INDIA—continued.

TABLE 331.

NUMBER of DEATHS from ACCIDENTS at MINES and OPEN WORKINGS during the Year 1899 and 1900.

Class of Mines or Workings.	1899.			1900.		
	Number of Deaths.			Number of Deaths.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	93	5	98	59	3	62
Gold*	44	7	51	56	8	64
Mica	3	—	3	8	—	8
Salt	—	—	—	1	—	1
Stone, &c.	—	1	1	—	—	†
Total	140	13	153	124	11	135†

TABLE 332.

DEATH-RATE from ACCIDENTS at MINES and OPEN WORKINGS during the Years 1899 and 1900.

Class of Mines or Workings.	1899.			1900.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	1·80	·22	1·32	·95	·10	·69
Gold	3·33	·65	2·12	4·18	·69	2·56
Mica	†	—	†	†	—	†
Salt	—	—	—	·77	—	·69
Stone, &c.	—	·50	·49	—	—	—
Total	†	†	†	†	†	†

* Including Mysore Gold Mines.

† Returns incomplete.

‡ Death-rates cannot be calculated as the returns of persons employed are not complete.

NATAL—continued.

TABLE 335.

QUANTITY and VALUE of COAL and GOLD produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	328,693	333,968	139,727*	241,330	245,203	241,330*
Gold	ozs. 61½	kilos. 2	239	ozs. 13	gr. 404	50

TABLE 336.

DEATHS FROM ACCIDENTS at PRODUCING COLLIERIES during the Years 1899 and 1900.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1899	8	—	8	3	—	3	11	5.38
1900	1	—	1	—	—	—	1	.62

In addition to the 11 deaths in 1899, there were 4 persons killed at collieries which had not reached the production stage, and one person killed at a gold mine, and in 1900, there was also one person killed at a colliery still in the development stage.

Newfoundland.†

At the present time the important mineral exports from Newfoundland are copper ore, copper regulus, and iron ore.

Copper Ore.—The mines at Tilt Cove were by far the largest producers.

Iron Ore.—The valuable deposits of red hæmatite at Great Bell Island, Conception Bay, are being mined on a large scale ; the ore is shipped to Nova Scotia and to the United States.

TABLE 337.

PERSONS EMPLOYED at MINES and QUARRIES during the Year 1900.

Kind of Workings.	Under-ground.	Above-ground.	Total.
Copper mines	173	229	402
Iron ore workings ...	—	865	865
Stone quarries	—	85	85
Total	173	1,179	1,352

* Value estimated by the Commissioner of Mines, see Report on the Mining Industry of Natal for 1900, Pietermaritzburg, 1901, p. 2.

† Report of the Mineral Statistics for 1900, by J. P. Howley, Director of Geological Survey of Newfoundland, 1901.

NEWFOUNDLAND—*continued.*

TABLE 338.

QUANTITY and VALUE of the MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Chromite	706	717	2,137	—	—	—
Coal	5,000	5,080	4,110	—	—	—
Copper ore and regulus* ...	86,957	88,352	94,628	70,614	71,747	82,146
Granite... ..	100	102	103	—	—	514
Iron ore	306,880	311,805	63,058	317,216	322,307	65,181
Iron pyrites	26,154	26,574	37,619	—	—	—
Mica	23	23	136	—	—	—
Slate	—	—	—	600	610	2,219
Stone :—						
Building	500	508	103	500	508	103
Paving	3,512	3,568	5,774	—	—	—
Total Value	—	—	207,668	—	—	150,163

TABLE 339.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Year 1900.

Kind of Workings.	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.
Copper Mines	3	7.46
Iron Ore Workings	—	—
Stone Quarries... ..	—	—
Total	3	2.22

New Guinea (*see* BRITISH NEW GUINEA).

* The copper ore contains a little gold, and it is reckoned that 2,000 to 3,000 ounces are extracted annually from Newfoundland ores. It is estimated that 2,882 tons of metallic copper, and 2,400 ozs. of gold were obtainable from the ore in 1900.

New South Wales.*

Coal and the ores of gold, lead, and silver are the principal minerals worked in this Colony.

Coal.—The existence of coal has now been known for rather more than a hundred years, and the quantity raised during the last century is reckoned to be more than 76 million tons, of which more than 75 million have been obtained since 1857. The output for 1900, which exceeded $5\frac{1}{2}$ million tons, is the greatest hitherto recorded.

Excluding lignite and seams of Triassic age, it is reckoned that the main coal-bearing rocks of the Colony extend over an area of 24,000 to 28,000 square miles around the seaport of Sydney.

Copper.†—The rise in the price of the metal has caused more attention to be directed to the copper resources of the Colony. The principal mine at the present time is at Cobar.

Diamonds.—Diamonds are found in several parts of the Colony, and gem-bearing gravel is now being worked on a large scale at Inverell.

Gold.—The most important gold yielding districts in 1899 were Bathurst, Lachlan Mudgee, and Peel and Uralla.

Following the lead of New Zealand, dredging for gold has been commenced in some of the rivers ; at the end of 1900 there were some 22 dredging plants in operation.

Silver and lead.—The silver and lead mining of the Colony is practically concentrated at Broken Hill, in the Albert Mining District. The gross value of the silver, lead, and zinc which could be profitably extracted from the Broken Hill ore was estimated to exceed four millions sterling in 1900.

TABLE 340.

PERSONS EMPLOYED at all MINES during the Years 1899 and 1900.‡

Kind of Mines.	1899.			1900.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	8,217	2,122	10,339	9,000	2,333	11,333
Gold { alluvial ...	—	—	8,030§	—	—	8,387||
	—	—	11,318	—	—	9,571
Shale	141	43	184	105	53	158
Silver, Lead and Zinc.	—	—	7,893	—	—	8,196
Other mines ...	—	—	5,056	—	—	6,100
Total	—	—	42,820	—	—	43,745

* *Annual Report of the Department of Mines and Agriculture for 1900*: Sydney, 1901; and Pittman, *The Miners Resources of New South Wales*, Sydney 1901.

† Carne, "The Copper Mining Industry of New South Wales," *Mineral Resources*, No. 6. Department of Mines and Agriculture, Sydney, 1899.

‡ *Annual Report of the Department of Mines and Agriculture for 1899*, pp. 59 and 93; and for 1900, pp. 4 and 118.

§ Including 811 Chinese.

|| " 779 "

NEW SOUTH WALES—continued.

TABLE 342.

DEATHS from ACCIDENTS at all MINES during the Years 1899 and 1900.*

Kind of Mines.	1899.		1900.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal and shale ...	10	·95	24	2·09
Gold { alluvial ...	7	·87	2	·24
{ quartz ...	11	·97	9	·94
Silver and lead ..	15	1·90	26	3·17
Other mines... ..	6	·76	5	·82
Total	49	1·14	66	1·51

TABLE 343.

DEATHS from ACCIDENTS at COAL and SHALE MINES during the Years 1899 and 1900.†

Year.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
1899	9	1	10	1·08	·46	·95
1900	20	4	24	2·20	1·68	2·09

The following table shews a considerable improvement since 1895 in the cases of lead poisoning at the Broken Hill mines:—

TABLE 344.

BROKEN HILL MINES.‡

Year.	Number of Persons Employed.	Cases of Lead Poisoning Reported.	Percentage of Persons Affected.
1895	4,297	89	2·07
1896	5,400	44	·81
1897	6,473	17	·26
1898	6,842	14	·20
1899	7,252	13	·18
1900	7,405	5	·07

* Annual Report of the Department of Mines and Agriculture for 1899, pp. 19 and 115, and 1900, pp. 4, 88, and 89.

† Corresponding Reports for 1899, pp. 115 and 119, and for 1900, pp. 123 and 130.

‡ 1899, p. 96 and for 1900, p. 92.

New Zealand.*

The three important minerals worked in New Zealand are coal, gold, and kauri gum.

Coal.—167 collieries were at work in 1900. The largest are near Westport, on the west coast of the Middle Island

Gold.†—Gold is obtained in various parts of the Islands; the precious metal is extracted by ordinary alluvial diggings, by hydraulic mining, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this method of extraction is rapidly coming into favour. On the 31st March 1901, 145 dredges were at work and 122 under construction, in addition to 11 standing and 4 under removal.

Kauri Gum.—Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives, and the price paid for the semi-fossil resin is so great that its value considerably exceeds the total value of the coal produced.

The Mining Act of 1898 mentioned in the General Report for 1898, p. 317, has been amended by two short Statutes, viz., "The Mining Act Amendment Act, 1899," and "The Mining Act Amendment Act, 1900." The latter contains provisions enabling workmen to inspect the mine at their own cost; if they make an inspection they are obliged to make a report and to furnish the owner or manager with a copy of it.

TABLE 345.

PERSONS EMPLOYED at COAL MINES during the years 1899 and 1900.‡

	Year.	Under-ground.	Above-ground.	Total.
	1899	1,599	554	2,153
	1900	1,843	617	2,460

TABLE 346.

PERSONS EMPLOYED at GOLD MINES during the Years ended 31st March 1900 and 1901.§

Mining District.	Alluvial Miners.		Quartz Miners.		Total.		Grand Total.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1901.	1900.
Auckland	7	—	3,226	—	3,233	—	3,233	3,458
Marlborough	133	—	22	—	155	—	155	143
Nelson	1,915	331	667	—	2,582	331	2,913	2,424
Westland	1,787	394	3	—	1,790	394	2,184	2,459
Otago	3,817	851	349	—	4,166	851	5,017	4,807
Total	7,659	1,576	4,267	—	11,926	1,576	13,502	13,291

* Hon. James McGowan, *New Zealand, Mines Statement*, Wellington, 1901.

† *Hayes Report of the Department of Mines on the Goldfields of New Zealand for the year 1900.* Wellington, N.Z., 1901.

‡ *Inspection of Coal Mines Reports.* C.—3a, Wellington, 1900 and 1901.

§ Hon. James McGowan, *New Zealand, Mines Statement*, Wellington, 1901. C.—2, p. 16.

NEW ZEALAND—continued.

TABLE 347.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.*

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony	—	—	—	3	3	101
Chrome ore	—	—	—	28	28	110
Coal	975,234	990,884	487,617	1,093,990	1,111,546	568,775
Coke (exported)	18	18	9	—	—	—
Copper ore	—	—	—	12	12	45
Gold	ozs. 389,558	kilos. 12,117	1,513,173	ozs. 373,616	kilos. 11,621	1,439,602
Kauri gum	11,116	11,294	607,919	10,159	10,322	622,293
Manganese ore	135	137	407	166	169	588
Silver	ozs. 349,338	kilos. 10,866	40,838	ozs. 326,457	kilos. 10,154	38,879
Sulphur	1,227	1,247	6,591	2,126	2,160	12,751
Sundry mixed minerals	82	83		—	—	—
Total value	—	—	2,656,554	—	—	2,703,147

TABLE 348.

DEATHS from ACCIDENTS at MINES and DREDGING WORKS during the Years 1899† and 1900.*

Kind of Workings.	1899.		1900.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Coal mines	3	1·39	4	1·63
Gold mines	5	1·07	4	·94
„ alluvial, hydraulic, sluicing and dredging.	16	1·85	9	·98
Total	24	1·5	17	1·07

A Royal Commission was appointed in October, 1900, to enquire into the outbreak of fire at the Westport-Cardiff Coal Mine, on the 28th January, 1900, and into the management, control and inspection generally of the principal coal mines of the Colony. The

* Hon. James McGowan, *New Zealand, Mines Statement*, Wellington, 1901. C.—2, pp. 1 and 6.

† Hon. A. J. Cadman, " " " 1900. C.—2, p. 8.

NEW ZEALAND—*continued.*

Commission recommended the appointment of a Chief Inspector of Coal Mines for the Colony, and of additional Inspectors. Other recommendations deal with the determination of the coal resources of the Colony, the sale of coal-bearing lands, the reservation of coal areas, haulage, rates on railway, and State distribution of coal.

Nigeria.

About the mineral wealth of Nigeria little can be said definitely at the present time. The region is known to contain deposits of antimony, silver, and tin.

North Borneo. (*See* BRITISH BORNEO.)

Nova Scotia. (*See* CANADA.)

Ontario. (*See* CANADA.)

Orange River Colony.

Coal.—The Colony possesses valuable coal resources. No particulars of output have yet been received.

*Diamonds.**—Owing to the war in South Africa and to the fact that during the months of October, November, and December, 1900, the town of Jagersfontein was in state of siege, mining was carried on under very great difficulties and upon a very reduced scale. The total yield of diamonds for the financial year ended 31st March, 1901, was only 18,002½ carats, which realized £37,079.

Quebec. (*See* CANADA.)

Queensland.†

As will be seen by the table on the following page, Queensland produces a great variety of minerals ; but at the present time none are of much importance except gold.

Gold.—Queensland's goldfields are numerous. The most important is Charters Towers, which produced last year nearly one-half of the total output of the colony. It must be recollected, however, that the Charters Towers gold is of poor quality, for it contains on an average only 62 per cent. of fine gold. The Mount Morgan field comes next in importance ; it yields a far purer gold.

* *The New Jagersfontein Mining and Exploration Co., Ltd. Thirteenth Annual Report and Accounts for the year ended 31st March, 1901.* Kimberley, 1901.

† *Annual Report of the Under Secretary for Mines for 1900.* Brisbane, 1901.

QUEENSLAND—continued.

TABLE 349.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.

Kind of Mines.					1899.	1900.
Coal	...	...	...	...	1,142	1,246
Gold	{ alluvial	...	...	...	2,614*	2,635†
	{ vein	...	...	...	7,144	7,528
Other mines	...	...	...	...	2,903	2,163
Total	...	...	...	...	13,803	13,572

TABLE 350.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony Ore	40	41	200	—	—	—
Bismuth ore	2	2	494	8	8	1,865
Coal	494,009	501,936	175,715	497,132	505,110	173,705
Copper ore	161	164	9,498	384	390	23,040
Gold (crude)	ozs. 946,894	kilos. 29,452	2,838,119	ozs. 963,189§	kilos. 29,959	2,871,709
Lead	56	57	730	205	208	3,359
Manganese ore	735	747	2,331	75	76	205
Molybdenite	—	—	—	11	11	561
Opal	—	—	9,000	—	—	7,500
Sapphire	—	—	—	—	—	900
Silver	ozs. 145,325	kilos. 4,520	15,671	ozs. 112,990	kilos. 3,514	12,712
Stones†:—						
Bluestone	79,856	81,137	10,574	110,276	112,046	12,363
Granite	—	—	—	9,000	9,144	900
Limestone	—	—	—	9,583	9,737	2,670
Porphyry	72,871	74,040	7,593	14,794	15,031	1,624
Sandstone	9,608	9,762	4,297	6,373	6,475	3,920
Slate	—	—	—	50	51	40
Volcanic Ash	—	—	—	92,510	93,995	7,323
Tin ore (dressed)	1,308	1,329	77,302	1,123	1,141	74,041
Wolfram ore	259	263	10,060	189	192	6,605
Total value	—	—	3,162,084	—	—	3,205,042

* Including 710 Chinese.

† 472

‡ Statistics of Queensland for 1900, Brisbane, 1901.

§ Fine gold 676,029 ozs., or 21,027 kilos.

QUEENSLAND—*continued.*

TABLE 351.

DEATHS FROM ACCIDENTS AT MINES during the Years 1899 and 1900.

Kind of Mines.	1899.		1900.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	1	·87	9	7·22
Gold	18	1·84	17	1·67
Other mines ...	—	—	1	·46
Total	19	1·38	27	1·99

The high death-rate at the Queensland collieries in 1900 is due to an explosion of gas which killed five persons. The men were working with naked lights. The accident was very carefully investigated by a Royal Commission, which made numerous recommendations in its report.*

The Commissioners desire, among other things, that a higher class of men should be employed as managers, and that no person should be eligible to manage a coal mine, in which more than 10 persons are employed underground, unless he possesses a first class certificate of competency or a certificate of service.

Redonda† (Leeward Islands).

The number of persons employed in obtaining phosphate of alumina in 1899 was about 85, and in 1900 about 146.

TABLE 352.

QUANTITY and VALUE of MINERAL produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Phosphate of alumina ...	1,483	1,507	1,854	2,195	2,230	2,744

* Report of the Royal Commission appointed to inquire into and report upon the nature and cause of a disastrous accident which occurred at the Torbanlea Colliery on the 21st March, 1900, and also concerning the occurrence of inflammable gas in the mines situated on the Burrum and Ipswich coal fields. Brisbane, 1900, p. xli.

† Information furnished by the London Phosphate Syndicate, Ltd.

Rhodesia.

Rhodesia is rich in coal and gold.

Coal.—In the Wankie coalfield alone, which lies 190 miles north-west of Bulawayo, the workable seams are considered capable of yielding 1,500 million tons of coal.

Gold.—The auriferous deposits are very extensive, and the output of gold is increasing steadily.

TABLE 353.
OUTPUT of GOLD.*

	1899.		1900.	
	Ozs.	Kilos.	Ozs.	Kilos.
	65,304	2,081	91,940	2,860

Sarawak. (See BRITISH BORNEO.)

Somali Coast Protectorate.†

Mica is found and there are indications of iron ore.

Sombrero.

The phosphate of lime quarry at Sombrero is no longer worked.

South Australia.‡

There are no records in the Mines Department affording information as to the number of persons employed at mines in South Australia proper, or as to the number of deaths from accidents. It is estimated, however, that during the year 1899 about 4,500 persons were engaged in mining in that division of the Colony, and principally for copper and gold. Of the 1,304 persons engaged in mining in the Northern Territory, 94 per cent. were Chinese.

Copper.—Copper ore is by far the most important mineral of this Colony. It is obtained chiefly from mines in Yorke's Peninsula in South Australia proper.

Gold.—Compared with that of the other Australian Colonies, the output of gold is at present insignificant. Most of it comes from the Northern Territory.

* Report of the Rhodesia Chamber of Mines furnished by the British South Africa Co.

† Consul-General Hayes Sadler, "Trade of the Somali Coast for the year 1898-99." *Dipl. and Cons. Reports*, No. 2384 Ann. Ser., 1900 [Cd. 1-21].

‡ Official Return furnished by Department of Mines, Adelaide.—Government Resident's Report on the Northern Territory for the Year 1900.—Statistical Registers for 1899 and 1900.

SOUTH AUSTRALIA—*continued.*

TABLE 354.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.

		Average Number of Persons Employed in and about the Mines during the years	
		1899.	1900.
South Australia proper		4,500*	†
Northern Territory... ..		1,486	1,304
Total		5,986	†

It is estimated that 350 persons were employed at quarries in 1899.

TABLE 355.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper (exported)	5,496	5,584	406,208	4,886	4,964	371,920
Copper ore	2,893	2,939	24,682	2,805	2,850	36,621
Gold	ozs. 35,000	kilos. 1,089	105,000	ozs. 24,155‡	kilos. 751	82,422
Lead (exported)	364	370	3,782	382	388	4,882
Manganese	100	102	118	—	—	—
Mica	—	—	—	—	—	1
Salt	47,100	47,754	14,100	33,425§	33,961	87,236
Silver lead ore... (exported)	40	41	400	1,861||	1,891	18,046
Tin ore	2	—	180	17	17	774
Wolfram	—	—	—	9	9	440
Zinc (spelter)	19	—	352	—	—	—
Unenumerated ore	—	—	487	—	—	441
Total value	—	—	555,309	—	—	552,283

Straits Settlements.¶

There is practically no mining going on in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore; but the adjacent Federated Malay States are great producers of tin ore (*see* p. 328). Much of their ore is treated at Singapore, which now has the largest tin-smelting works in the world, for no less than 31,567 tons of ore were converted into metal at that port in the year 1899.

Laterite is quarried for road metalling in Singapore and Malacca, and granite in the islands to the East of Singapore.

* Approximate.

† Figures not yet available.

‡ These figures have been taken from the Mining Statistics issued by the Department of Mines for Western Australia.

§ Quantity exported.

|| Estimated to contain 10,000 ozs. of fine silver.

¶ Colonial Reports, Annual. No. 304. Straits Settlements. Report for 1899. [Cd. 354-10.] London, 1900. pp. 15-16.

Tasmania.*

Tasmania is producing a little coal, but its importance at the present moment as a mineral country is due to its great deposits of the ores of copper, lead, gold, silver, and tin.

The Official Handbook of Tasmania† contains a useful map showing the principal mineral districts.

Coal.—The output is at present insignificant.

Copper.—Mount Lyell Mine in the West Coast district is the great producer of copper, and the ore is further made valuable by containing gold and silver. The Mount Lyell ore yielded 9,843 tons of blister copper in the year 1899–1900.

Gold.—In addition to the gold obtained from the copper ore of Mount Lyell and its neighbours, there are numerous veins of gold-bearing quartz. The Tasmania Mine, Beaconsfield, is the largest producer, and yielded 30,059 ozs. in the year 1899–1900.

Lead and Silver.—The Zeehan district boasts of many rich deposits of silver-bearing lead ore, and Tasmania is already producing very nearly as much lead ore as the United Kingdom.

Tin.—As in the case of its competitor Cornwall, it was tin ore which first drew special attention to the mineral wealth of the country. For many years tin was the principal mineral export of Tasmania; though still an important product, its value is now exceeded by that of the gold. Mount Bischoff continues to be one of the largest tin mines in the world.

Mining in Tasmania is now regulated by "The Mining Act, 1900," which came into operation on the 1st of January, 1901. The Act is a long one, as it deals with various matters, such as prospectors' licences, miners' claims, leases, water rights, timber rights, deposit of tailings, &c., which do not enter into the province of our British Mines Regulation Acts.

Part VI., which deals with the regulation of mines, gives the Governor in Council power to prescribe terms and conditions for the issue of certificates of competency to mine managers. Plans must be made "by a duly-authorized surveyor, or by a mining manager who holds a certificate of competency under this Act, or by any person approved by the Chief Inspector of Mines." There are 43 general rules, as against 19 in our British Metalliferous Mines Regulation Act, 1872. The first of these rules prescribes a current of not less than 100 cubic feet of fresh air per minute for each man and boy employed in the mine.

Under Part XII. a Mining Board is established, consisting of the Minister of Mines, the Secretary for Mines, and four Commissioners. This Board is practically a Mines Department. Part VII. gives powers to make mining companies contribute towards the expense of pumping, if their workings are being kept drained by the pumping appliances of their neighbours.

The Governor in Council has ample powers under Part XVI. for dealing with a very large number of mining questions.

TABLE 356.

PERSONS EMPLOYED at the MINES during the Years ended 30th June 1899–1900 and 1900–1901.

	1899–1900.	1900–1901.†
	6,834	

* Report of the Secretary for Mines, 1899–1900, Hobart, 1900; and Ministerial Statement of the Minister of Lands, Works, Mines, and Railways, 1901. Hobart, 1901.

† Launceston, 1899.

‡ Figures are not yet available.

TASMANIA—continued.

TABLE 357.

QUANTITY and VALUE of the MINERALS produced during the Years ended 30th June 1899-1900 and 1900-1901.

Description of Mineral.	1899-1900.			1900-1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Asbestos	284	289	432	90	91	89
Coal	46,537	47,284	41,883	43,010	43,700	35,750
Copper (blister)	9,843	10,001	810,005	9,382†	9,533	781,949
" ore	184	187	1,835	11,572	11,758	153,584
Gold	ozs. 83,784	kilos. 2,606	333,980	ozs. 79,543	kilos. 2,474	306,500
Iron ore	5,358	5,444	5,137	2,772	2,816	3,517
Silver lead ore	29,169	29,637	266,618	24,327‡	24,717	263,792
Tin ore	3,330	3,383	312,376	2,993	3,041	266,667
Wolfram	39‡	40	1,537	18	18	620
Total value	—	—	1,773,803	—	—	1,812,468

TABLE 358.

DEATHS from ACCIDENTS at MINES during the Years ended 30th June 1899-1900 and 1900-1901.

1899-1900.		1900-1901.*	
Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
7	1.02		

Transvaal.

Owing to the war the output of gold was small. The quantity obtained in the Witwatersrand District during the period from November 1899 to May 1900 was 472,748 ozs. (kilos. 14,704) of fine gold.§

Trinidad.||

Although coal, glance pitch, gypsum, galena, and petroleum are to be found, the Colony possesses no mines, properly so called.

* Figures are not yet available.

† Estimated to contain 1,098,144 ozs. or 34,156 kilos. of fine silver ore. Value of the gold contained in the blister copper has been deducted.

‡ Estimated to contain 2,392,155 ozs. or 74,404 kilos. of fine silver, on the assumption that 98‡ ozs. are contained in one ton of ore.

§ Return furnished by the Transvaal Chamber of Mines, Johannesburg.

|| Blue Book for Trinidad, 1899 and 1900, and Governor Sir A. Moloney, "Trinidad and Tobago Annual Report for 1900." Colonial Reports. Annual, No. 338, London, 1901 [Cd. 788—8].

The only mineral workings of any consequence are the diggings for asphalt at the well-known Pitch Lake at La Brea. The output for 1900 was the largest on record.

TABLE 359.

QUANTITY and VALUE of ASPHALT exported in the Years 1899 and 1900.

	1899.			1900.		
	Quantity		Value.	Quantity.		Value.
	Galls.	Litres	£	Galls	Litres.	£
Asphalt, liquid	4,270	19,401	49	2,052	9,323	1,381
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
„ purified	14,483	14,715	29,609	16,847	17,117	33,695
„ raw	122,097	124,056	122,406	141,905	144,182	142,884
„ dried	780	793	1,089	—	—	—
Total value	—	—	153,153	—	—	177,460

Turks and Caicos Islands.*

The production of salt is the most important industry in these islands. It is obtained by the solar evaporation of sea water in shallow ponds on the coast.

TABLE 360.

Mineral.	1899.			1900.		
	Quantity Exported.		Value.	Quantity Exported.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Salt	55,197	56,083	21,138	54,737	55,615	23,492

Uganda Protectorate.

The mineral resources of Uganda are summed up as follows by Sir H. H. Johnston,† H.M. Special Commissioner:—“As regards minerals, except that iron exists in most parts of the Protectorate, and is easily worked by the natives, little is known of the existence of other metals. Copper is vaguely reported from some of the Nile countries, but no precise information is at hand. In the same way, gold is said to be found by the natives in the gravel of river beds on the north-west of Lake Rudolf. In these respects the country has been so little explored that it is impossible to say whether it may turn out to be very rich in precious metals, or very poor. Coal is reported to be found on the slopes of Mount Elgon.”

* Governor Sir A. W. L. Hemming, “Turks and Caicos Islands Annual Report for 1900.—*Colonial Reports—Annual*, No 328, London, 1901 [Cd. 431-20].

† *Jour. Soc. Arts*, Vol. xlviii., 1900, p. 887.

Victoria.*

Coal.—Victoria possesses large deposits of brown coal of Tertiary age. Up to the present time they have been little utilised.

Gold.—Victoria stands second among the Australian Colonies as a gold producer. It is true that the weight of its bar gold was less than that of Queensland; but it has already been pointed out that much of the gold from the latter colony has a comparatively low standard of fineness, so that when its output is reduced to fine gold it falls behind Victoria.

The members of the Mine Ventilation Bonus Board do not hesitate in their Final Report† to condemn in very plain terms the want of adequate ventilation in many of the mines in Victoria, for they use the following words:—"The Appendices to this Report show that in a majority, at least, of the mines visited the conditions were such, by reason of defective ventilation, that no man should be expected or permitted to work under." In order to remedy this state of things the Government has appointed‡ a Chief Inspector of Ventilation, whose business it is to make analyses of samples of mine air obtained by the Inspectors of Mines.

TABLE 361.
PERSONS EMPLOYED at MINES during the Years 1899 and 1900.

		1899.	1900.
Coal	... ..	880	807
Gold	... ..	30,114	29,035
Other Mines	... ..	27	23
Total	... ..	31,021	29,865

TABLE 362.
QUANTITY and VALUE of the MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Building stone	—	—	20,000	—	—	35,000
Clays	—	—	5,500	—	—	9,000
Coal	262,380	266,590	113,522	211,596	214,992	101,599
Gold	ozs. 854,500	kilos. 26,578	3,418,000	ozs. 807,407	kilos. 25,113	3,329,628
Infusorial earth	100	—	250	—	—	—
Quicksilver	—	—	20	—	—	—
Tin ore	156	158	11,200	71	72	5,01
Total value	—	—	3,568,492	—	—	3,380,244

* Annual Reports of the Secretary for Mines for Victoria for 1899 and 1900.

† Victoria Mine Ventilation. Final Report of the Mine Ventilation Bonus Board. Melbourne, 1900, p. 18.

‡ Op. Cit., p. 29.

VICTORIA—continued.

TABLE 363.
DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.

Kind of Mines.	1899.		1900.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	4	4.55	1	1.24
Gold	41	1.36	35	1.21
Total	45	1.45	36	1.21

Western Australia.*

A map of the Colony, prepared by Mr. Maitland, the Government Geologist, and pre-facing the Report of the Department of Mines, shows by coloured signs the distribution of the various useful minerals which have been discovered, viz.:—Antimony, asbestos, coal, cobalt, copper, diamonds, gold, graphite, iron, lead, mica, silver, and tin.

Coal.—There are now three collieries at work on the Collie Coalfield and the output of coal for 1900 was more than twice that of the previous year.

Copper Ore.—It is stated that Western Australia is likely to become a large copper producer. The ores are being worked in the West Pilbarra Goldfields and in the Mount Margaret Goldfield; numerous other deposits are known to exist.

Gold.—The output of gold has decreased by about 3.8 per cent., but judging by the fact that some of the newer goldfields are increasing their returns there is hope that the diminution in the yield for 1900 is only temporary. Nearly half the gold was produced by the East Coolgardie Field, with a total output of 737,971 ozs.; next in importance comes the Mount Margaret Field with 145,689 ozs. The Murchison, North Coolgardie, and Coolgardie Goldfields each produced somewhat more than 100,000 ozs. each.

Tin Ore.—The increase in the output of tin ore is largely due to the development of the resources of the Marble Bar Tinfield in the Pilbarra Gold district. The Greenbushes Tinfield in the southern part of the colony likewise shows an improvement.

TABLE 364.
PERSONS EMPLOYED at MINES during the Years 1899 and 1900.

Kind of Mines.	Under-ground.	Above-ground.	Total for 1900.	Total for preceding Year.
Coal	296	104	400	192
Copper Ore	90	120	210	147
Diamonds	—	5	5	—
Gold	8,597	8,150	16,747	16,080
Lead Ore	4	4	8	14
Limestone	—	10	10	—
Tin	59	296	355	698
Total	9,046	8,689	17,735	17,131

* Reports of the Department of Mines of Western Australia for the Years 1899 and 1900. Maitland. "The Mineral Wealth of Western Australia." Geological Survey Bulletin No. 4, Perth, 1900.

WESTERN AUSTRALIA—continued.

TABLE 365.

QUANTITY and VALUE of the MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.			1900.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. (Not stated)	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos (exported) ...	—	—	1	—	—	—
Coal	54,336	55,208	25,951	118,410	120,310	54,835
Copper ore	2,964	3,012	35,938	6,183	6,282	43,673
Diamonds	—	—	—	—	—	24
Gold	ozs. 1,643,877	kilos. 51,130	6,246,732	ozs. 1,580,950	kilos. 49,173	6,007,610
Iron ore	12,852	13,058	8,939	12,251	12,448	9,258
Lead ore	83	84	912	268	272	533
Lead, pig (exported)...	77	78	1,077	—	—	—
Limestone	17,593	17,875	2,838	15,927	16,183	3,594
Mica (exported) ...	(Not stated)	—	50	(Not stated)	—	3
Salt*	110	112	249	131	133	393
Silver (exported) ...	—	—	—	ozs. 28,749	kilos. 894	3,594
Tin ore (dressel) ...	335	340	25,270	823	836	56,702
Total value	—	—	6,847,957	—	—	6,180,219

* Produce of Rottnest Island only.

TABLE 366.

DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.

Kind of Mines.	1899.						1900.					
	Number of Persons Killed.			Death-rate per 1,000 Persons Employed.			Number of Persons Killed.			Death-rate per 1,000 Persons Employed.		
	Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.
Coal	1	—	1	6.85	—	5.21	—	—	—	—	—	—
Gold	37	7	44	4.32	.93	2.74	36	9	45	4.19	1.10	2.69
Other mines ...	—	—	—	—	—	—	—	—	—	—	—	—
Total for all mines	38	7	45	4.29	.84	2.63	36	9	45	3.98	1.04	2.54

Several of the accidents were due to the breakage of wire ropes, used for winding, and subsequent investigations showed that the wires had been badly corroded internally by the chemical action of the mine water.

West Indies. (See BARBADOS, DOMINICA, REDONDA, SOMBRERO and TRINIDAD.)

FOREIGN COUNTRIES.

Abyssinia.*

Coal.—Workable lignite is said to occur at Debra, Libanos, and Ankober.

Gold.—This metal is obtained from the Wallega, Shankalla and Benischongul districts. The gold exported from Addis Abbaba and Harrar was estimated to be worth £139,600, the amount of fine gold may be reckoned to have been 31,161 ozs., and of fine silver contained in the gold about 2,710 ozs.

Salt.—Mines at Arho in the Tittal country between Makallé and the Red Sea produce a large quantity of salt; the mineral is likewise obtained from Gojam. The estimated value of the salt produced in the whole of the Addis Abbaba district amounted to £18,700.

Algeria.†

The two principal minerals raised in Algeria are iron ore and phosphate of lime. A considerable quantity of limestone is quarried, and the workings for salt and zinc ore are of some importance.

Iron Ore.—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by the Mokta-el-Hadid Mines near Bona and the Benisaf Mines near Tlemcen. The former exported 166,000 tons in 1900, and the latter 436,000 tons.‡

Marble.—Numidian marble had won renown in the time of the Romans. The onyx marble produced by the Colony is of great beauty. One of the localities where it is found is Sidi-Hamza. Quarries at Filfila near Philippeville produce statuary marble as well as many coloured varieties.

Petroleum.—Great hopes are based upon the occurrence of mineral oil in the Department of Oran; of the existence of wide petroliferous zones there is no question. It remains to be seen how far the oil can be extracted with profit.

Phosphate of Lime.—The growth of the phosphate industry has been very rapid. The annual output, which was only about 5,000 tons in 1893, now amounts to more than 300,000 tons. The phosphate is quarried in the vicinity of Tébessa and at Tocqueville in the Province of Constantine, and it is now the most important mineral product of Algeria.

Salt.—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

Zinc Ore.—Calamine and blende are both worked.

TABLE 367.

PERSONS EMPLOYED during the Years 1899 and 1900.‡

Year.	At Mines.	At Underground Quarries.	At Open Quarries.
1899	2,571	1,000	2,796
1900	2,201	1,000	2,718

* Baird "Report on the Trade of Addis Abbaba, and Harrar Abyssinia." *Dipl. and Cons. Reports*, No. 2531, Ann. Ser., 1899-1900 [Cd. 352 27] 1900, with map.

† Consul-General Hay-Newton, "Trade of Algeria for the year 1899." *Dipl. and Cons. Reports*, No. 2472, Ann. Ser., 1900. [Cd. 1-109].

‡ *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1899, and pour l'année 1900.*

ALGERIA—continued.

TABLE 368.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore	200	52,000	93	15,874
Brown coal	154	1,848	400	4,800
Iron ore	550,941	4,661,631	601,788	5,584,486
Lead ore, argentiferous	389	52,412	222	31,910
Rock salt and salt from brine	17,378	336,500	18,325	381,440
Zinc ore	42,970	2,512,895	30,281	1,537,970
Total Value in Francs	—	7,617,286	—	7,556,480
„ „ £ sterling	—	304,691	—	302,259

TABLE 369.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Clay	88,600	369,370	94,000	380,700
Flags	7,000	74,325	8,800	94,050
Gypsum	200	500	500	1,250
Limestone	25,645	604,905	25,700	605,250
Marble	225	2,140	—	—
Onyx... ..	217	61,987	228	64,980
Plaster	31,800	588,975	37,100	694,700
Phosphate of lime	324,983	6,499,660	319,422	6,388,440
Sand and gravel	72,760	79,135	71,860	72,846
Stone for building	726,363	1,977,273	712,330	1,843,265
„ (rough and broken)	714,800	1,058,510	750,500	1,117,500
Total Value in Francs	—	11,316,780	—	11,262,981
„ „ £ sterling	—	452,671	—	450,519

* Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1899, and pour l'année 1900.

ALGERIA.]
ARABIA.]
ARGENTINE.]

358

[YEAR 1900.

ALGERIA—continued.

TABLE 370.

DEATHS from ACCIDENTS during the Years 1899 and 1900.*

Kind of Working.	1899.		1900.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines... ..	4	1.55	6	2.72
Underground Quarries	3	3.00	12	12.00
Open Quarries	3	1.07	7	2.57
Total	10	1.57	25	4.22

Annam. (See INDO-CHINA.)

Arabia.

The Arab is not a miner by nature, and there is little or no working for minerals on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

Argentine Republic.

All writers seem to agree that the mineral resources of the Argentine Republic are great†; little, however, has been done to develop them. In addition to the ores of copper, gold, iron, lead, mercury, nickel, and silver, the Republic can produce asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur. As railways are extended to the Andes, bringing facilities for working, the mining industry is sure to progress rapidly.

Unfortunately the National Department of Mines and Geology at Buenos Aires is unable to supply any statistics. The figures in the table below have, therefore, no official sanction.

TABLE 371.

QUANTITY and VALUE of COPPER, GOLD, and SILVER produced during the Years 1899 and 1900.

Metal.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
Copper (fine)† ...	Metric Tons. 66	£ 4,781¶	Metric Tons. 76	£ 5,510¶
Gold§	Kilos. 122	16,430††	Kilos 66	8,870††
Silver	Kilos. 11,930||	101,807**	††	—

* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1899, and pour l'année 1900.*
† "Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Proc., Inst. C. E.*, Vol. CXXVIII., 1896-7, Part II.
‡ Return compiled by Henry R. Merton & Co., Ltd., London.
§ Acting Consul Hankin, "Trade of Consular District of Buenos Ayres for the year 1900." *Dipl. and Cons. Reports*, No. 2,615, Ann. Ser., 1901 [Cd. 429-73.]
|| *Report of the Director of the United States Mint for 1900.* The figures relate to the year 1897.
¶ Value of foreign copper in London market.
** Coining value of fine silver.
†† Figures not available.
‡‡ Estimated.

Aruba. (See DUTCH WEST INDIES.)

Austria-Hungary.*

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by Austria, though not forming part of the empire.

It is to be regretted that statistics of persons employed and accidents for Austria for 1900 are not yet issued.

Coal.—Brown coal is worked on a large scale in Bohemia and in Hungary.†

Silesia is the largest producer of ordinary coal, next comes Bohemia, and then Moravia, and, fourthly, Hungary.

Gold.—The bulk of the gold comes from mines in Hungary, and especially from the neighbourhood of Nagybánya in the old principality of Transylvania.

Iron Ore.—Hungary again is the chief producer of iron, and the ores of this metal are worked in very many parts of the kingdom. Among the Austrian provinces, Styria takes the first place, and 99 per cent. of its output is spathose ore.

Lead Ore.—A large proportion of the Austrian lead ore comes from Carinthia.

Mercury.—The famous quicksilver mine at Idria in Carniola has now been worked for upwards of five centuries; since 1580 it has belonged to the State. A little mercury is obtained from Hungary.

Opal.—The celebrated opal mines of Hungary are situated at Dubnik in the county of Sáros; they are worked by the State. The annual output is 10 to 12,000 carats.

Ozokerite and Petroleum.—Galicia is remarkable for two important products, mineral wax and mineral oil. The principal workings for the former are at Boryslaw in the Drohobycz district, which likewise has the most productive oil-wells.

Salt.—The Government has a monopoly of the salt trade. Rock salt is obtained in Galicia and Hungary, and saliferous marl is treated by the lixiviation process in the Austrian Alps. On the shores of the Adriatic salt is extracted by solar evaporation from sea water.

Silver.—Bohemia and Hungary both produce silver. The Przibram mines in the former country have long been celebrated, not only as large producers of silver and lead, but also on account of their great depth.

With reference to the increasing use of electricity at mines, it may be well to notice that mine owners are compelled to conform with a code of rules drawn out by the Electro-Technical Society of Vienna‡ in 1891.

The report of the Mining Authorities upon the inspection of mines in Austria for the year 1897§ (issued in 1900) contains three useful appendices. The first gives the regulations for mines in the Vienna district; they are 175 in number, and deal with the following matters: (1) Protection of the surface; (2) safety of open and underground workings; (3) transport in levels, shafts and inclines; (4) ascent and descent; (5) ventilation; (6) lighting; (7) blasting; (8) excavation; (9) machinery and plant at the surface; (10) workpeople; (11) surveys; (12) miscellaneous.

* *Exposition Universelle de 1900, Paris; Catalogue Spécial de la Hongrie*, Budapest, 1900, p. 203; *Weltausstellung, Paris, 1900; Katalog der oesterreichischen Abtheilung*, Heft 7, Gruppe xi., Bergwesen, Vienna, 1900. Remenyik, *Les Mines de Métaux de Hongrie*, Budapest, 1900. Edvi-Illés, *L'Industrie des Mines de Fer et Hauts-fourneaux de Hongrie*, Budapest, 1900. Déry, *Les Charbonnages Hongrois*, Budapest, 1900.

† *L'exploitation des Charbonnages Hongrois*, Budapest, 1900.

‡ *Sicherheitsvorschriften für elektrische Starkstromanlagen*.

§ *Die Bergwerks Inspection in Österreich, Sechster Jahrgang 1897*, Vienna, 1900.

The appendices Nos. 2 and 3 are examples of the printed instructions concerning the measures which have to be taken at collieries in case of explosions of firedamp or coal dust or underground fires. The corresponding report for the year 1898* (issued in 1901), contains the official regulations for the salt mines in the Vienna inspection district, and those for the Graz district, and for petroleum borings in Galicia.

A strong endeavour is being made to improve the very primitive and dangerous kind of mining which until lately was prevalent in the Drohobycz district. The necessary qualifications of managers of ozokerite mines are set forth at length in the 3rd Appendix.

The Austrian Legislature has passed a law† which prohibits persons from being employed below ground in coal mines for more than nine hours per day, reckoning the time "from bank to bank." This law will come into operation on 1st July, 1902.

AUSTRIA.

TABLE 372.

PERSONS EMPLOYED at MINES, arranged according to PROVINCE in which Employed, during the Years 1899‡ and 1900.§

Province.	Persons Employed.			
	1899.		1900.§	
	Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower	868	0·66		
„ Upper	1,528	1·16		
Bohemia	60,544	45·78		
Bukowina	154	0·12		
Carinthia	3,927	2·97		
Carniola	2,498	1·89		
Dalmatia	458	0·35		
Galicia	4,541	3·43		
Görz and Gradisca	1	0·00		
Istria	1,067	0·81		
Moravia	11,674	8·83		
Salzburg	483	0·36		
Silesia... ..	27,527	20·81		
Styria	15,863	11·99		
Tirol	1,112	0·84		
Vorarlberg	1	0·00		
Total	132,246	100·00		

* *Die Bergwerks-Inspection in Österreich*, Siebenter Jahrgang 1898, Vienna, 1901.

† "81. Gesetz vom 27 Juni, 1901, womit bezüglich der beim Kohlenbergbau in der Grube beschäftigten Arbeiter das Gesetz vom 21 Juni, 1884, R. G. B. Nr. 115, über die Beschäftigung von jugendlichen Arbeitern und Frauenspersonen, das über die tägliche Arbeitsdauer und die Sonntagsruhe beim Bergbaue abgeändert wird." *Reichsgesetzblatt*, 1 Juli, 1901.

‡ *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums* for 1899 Vienna, Part II., No. 2, p. 134.

§ Figures are not yet available.

AUSTRIA—continued.

TABLE 373.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1899* and 1900.†

Year	Coal.						Brown Coal.						Iron Ore.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.
1899 ..	138	55,255	3,268	4,420	—	62,943	246	47,375	2,286	1,129	—	50,790	34	5,155	53	153	3	5,363
1900: ..																		

TABLE 373—continued.

Year.	Other Mines.						All the Mines.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	General Total.
1899	110	11,603	995	535	26	13,159	528	119,388	6,601	6,226	31	133,246
1900:												

TABLE 374.

PERSONS EMPLOYED at SALT MINES and WORKS during the Years 1899† and 1900.†

Country or Province.	Salt Mines.			Brine Evaporating Works and Sea Salt Works.					Total at Salt Mines and Works.				
	Men.	Young Persons.	Total.	Men.	Women.	Young Persons.	Children.	Total.	Men.	Women.	Young Persons.	Children.	Total.
Upper Austria ..	406	—	406	909	15	—	—	924	1,317	15	—	—	1,332
Salzburg	180	2	182	213	2	—	—	215	408	2	2	—	407
Bukowina	44	—	44	20	—	—	—	20	64	—	—	—	64
Styria	109	—	109	315	3	—	—	318	424	3	—	—	427
Tyrol	127	—	127	117	—	—	—	117	244	—	—	—	244
Dalmatia	—	—	—	1,464	402	—	109	1,975	1,464	402	—	109	1,975
Istria	—	—	—	830	552	284	64	1,730	830	552	284	64	1,730
Galicia	1,418	—	1,418	484	—	—	—	484	1,902	—	—	—	1,902
Totals for 1899 ..	2,296	2	2,298	4,352	974	284	173	5,783	6,648	974	286	173	8,081
Totals for 1900: ..													

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1899, Vienna, Part II., No. 2, pp. 136—135.

† Do. do. do. 1899, do. No. 2, p. 148.

† Figures are not yet available.

AUSTRIA—continued.

TABLE 375.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1899* and 1900.†

Province.	Kind of Workings.	1899.				1900.†			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
Galicia ...	Ozokerite ...	3,830	105	5	3,940				
.. ..	Petroleum ...	5,518	3	12	5,533				

TABLE 376.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1899 and 1900.‡

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum shale and vitriol ore ...	19,879	33,555	3,003	35,324
Antimony ore ...	410	76,218	201	18,042
Asphalt ...	2,635	75,671	887	48,015
Bismuth ore ...	3	1,898	4	12,789
Brown coal ...	21,751,794	95,167,467	21,539,917	112,633,577
Coal ...	11,455,139	89,500,247	10,992,545	95,590,921
Copper ore ...	6,731	483,055	5,825	478,496
Gold ore§ ...	387	62,038	227	42,831
Graphite ...	31,819	1,976,402	33,663	2,090,631
Iron ore ...	1,725,143	9,841,306	1,894,458	11,092,997
Lead ore ...	13,579	2,548,660	14,314	3,089,434
Manganese ore ...	5,411	91,193	8,804	136,948
Quicksilver ore ...	92,323	1,774,728	94,727	1,858,614
Silver ore|| ...	21,554	3,714,608	21,640	3,796,493
Sulphur ore ...	555	7,628	862	11,282
Tin ore ...	54	5,255	51	6,420
Tungsten ore ...	50	111,297	46	70,050
Uranium ore ...	49	107,104	52	161,346
Zinc ore ...	37,100	2,713,942	38,242	2,280,259
Total value in crowns ...	—	208,292,272	—	233,454,469
„ „ £ sterling ...	—	£8,671,618	—	£9,719,170

* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums* for 1899, Vienna, Part II., No. 2, pp. 253 and 254.

† Figures are not yet available.

‡ *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums* for 1900, Vienna, Part II., No. 1.

§ 79 kilos. of fine gold were obtained at the Metallurgical Works in 1899, and 76 kilos in 1900.

|| 39,560 kilos. of fine silver were obtained at the Metallurgical Works in 1899, and 39,567 kilos. in 1900.

AUSTRIA—continued.

TABLE 377.

QUANTITY and VALUE of SALT produced during the Years 1899* and 1900.†

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Crowns.
Upper Austria ...	312	64,150	—	16,835	14,173,602
Salzburg ...	7	25,101	—	2,822	4,844,444
Bukowina ...	2,343	3,513	—	132	1,043,860
Styria... ..	1,038	17,783	—	3,305	4,094,279
Tyrol ...	18	13,981	—	1,040	2,337,010
Dalmatia ...	—	—	5,741	—	534,823
Istria ...	—	—	26,323	—	4,461,802
Galicia ...	39,845	51,132	—	54,855	18,296,044
Total for 1900 ...	43,563	175,660	32,064	78,989	49,785,864 £2,072,684
„ 1899 ...	43,041	184,982	30,541	65,981	50,623,802 £2,107,569

TABLE 378.

QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1899‡ and 1900.§

Province.	Mineral.	1899.		1900.§	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Crowns.	Metric Tons.	Florins.
Galicia ...	Ozokerite ...	5,779	3,820,804		
„ ...	Petroleum ...	309,500	15,927,707		
	Total value in florins	—	19,748,511		
	„ £ sterling	—	£822,169		

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1899, Vienna, Part II., No. 1.

† Do. do. do. 1900, do. do.

‡ Do. do. do. 1899, do. No. 2, pp.253 and 254.

§ Figures for 1900 are not yet available.

AUSTRIA—continued.

TABLE 379.

ACCIDENTS at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1898 and 1899.*

Kind of Mines.	1899.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
Coal (bituminous)	68	390	1.08	168,458
Brown coal	88	420	1.73	247,179
Iron ore	9	35	1.68	191,683
Other mines (excluding salt and ozokerite mines, and petroleum wells).	9	57	0.68	25,838
Total for 1899	174	902	1.32	202,345
„ preceding year	162	922	1.26	209,833

TABLE 380.

ACCIDENTS at SALT MINES during the Years 1898 and 1899.*

Year.	Number of Deaths from Accidents.	Number of Persons injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
1898	—	10	—	—
1899	—	10	—	—

TABLE 381.

ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS during the Years 1898 and 1899.†

Kind of Workings.	1898.			1899.		
	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.
Ozokerite	9	26	1.66	4	31	1.02
Petroleum	4	40	0.68	6	43	1.08

The accidents have been classified according to mineral worked, place, and cause.

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1899, Vienna, Part II., No. 2, pp. 163, 173, and 181.
† Do. do. do. do. pp. 266-269.

AUSTRIA—continued.

TABLE 384.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORKINGS for OZOKERITE and PETROLEUM) during the Years 1898 and 1899.*

Cause of Accident.	Number of Persons killed.		Increase or Decrease.	
	1898.	1899.		
By falls of roof	40	37	—	3
„ haulage or winding appliances ...	24	33	+	9
„ stones or things falling down ...	30	34	+	4
„ machines or tools	8	9	+	1
„ falling down	22	17	—	5
„ firedamp	—	10	+	10
„ ignitions of inflammable gas ...	1	—	—	1
„ suffocation	8	7	—	1
During descent or ascent	1	2	+	1
By travelling in cage or climbing ladders	6	1	—	5
„ blasting	8	3	—	5
While undercutting (holing)	1	4	+	3
„ timbering	1	8	+	7
By irruption of water	6	5	—	1
„ other causes	6	4	—	2
Total	162	174	+	12

The preceding tables show that in the mines of Austria proper (exclusive of workings for ozokerite and petroleum) there were 174 deaths from accidents, or 12 more than in 1898.†

The accidents at the ozokerite and petroleum workings separately were as follows :—

TABLE 385.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS, classified according to the PLACE where the ACCIDENT happened, during the Year 1899, and total for the preceding year.‡

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts	3	2
In sinks and rises	—	3
In levels	2	9
At the working face	—	2
On surface	5	58
Total for 1899	10	74
„ preceding year	13	66

There were only 14 firedamp explosions in all the mines (ozokerite and petroleum workings included) of Austria proper ; by these 14 explosions 10 persons were killed, 10 were seriously injured, and 8 slightly injured. Of these 14 explosions 5 took place in coal mines in Bohemia, 3 in brown coal mines in Bohemia, 1 in a coal mine in Moravia, 1 in a coal mine in Silesia, 2 at petroleum wells in Galicia, and 2 in ozokerite mines in Galicia. The worst was a dust explosion in a brown coal mine in Bohemia, which caused the loss of 6 lives.

The 2 explosions at ozokerite mines and 1 of the explosions at petroleum wells in Galicia caused no personal injuries.

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1899, Vienna, Part II., No. 2, p. 165.

+ Do. do. do. do. p. 162.

‡ Do. do. do. do. pp. 266-269.

AUSTRIA—continued.

TABLE 386.

Separate EXPLOSIONS of FIREDAMP or COAL DUST, arranged according to kind of MINES or other MINERAL WORKINGS, and cause of ACCIDENT during the Year 1899.*

Cause.	Coal.	Brown Coal.	Ozokerite Mines and Petroleum Wells.	Total.
1. Naked lights	5	2	—	7
2. Flame of safety lamp driven through gauze.	1	—	—	1
3. Shot-firing	1	—	—	1
4. Use of matches	—	—	1	1
5. Sparks from pick	—	—	2	2
6. Burning slack let in by fall of roof.	—	1	—	1
7. Not ascertained	—	—	1	1
	7	3	4	14

The Austrian Government has lately issued a supplement † to its first collection of regulations for the prevention of mining accidents. Both books may be consulted with advantage by persons engaged in drawing up codes of rules for mines.

BOHEMIA.

As Bohemia employs such a large proportion of the miners in Austria, details concerning this province have been extracted from the official reports.

TABLE 387.

PERSONS EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1898 and 1899.‡

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
Coal	17,884	1,101	1,998	—	20,983	34.66
Brown coal	30,016	1,090	618	—	31,724	52.40
Iron	1,618	—	32	—	1,650	2.72
Other mines... ..	5,956	133	97	1	6,187	10.22
Total for 1899	55,474	2,324	2,745	1	60,544	100.00
.. preceding year	54,341	2,321	2,724	1	59,387	100.00

TABLE 388.

DEATHS at MINES during the Years 1898 and 1899.§

Kind of Mines.	Number of Deaths from Accidents.	Average Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral produced per Death by Accident.
Coal	30	1.43	135,679
Brown coal	69	1.18	260,288
Iron ore	1	0.61	656,036
Other mines... ..	6	0.97	10,126
Total for 1899	106	1.75	214,594
.. preceding year	95	1.60	246,112

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1899, Vienna, Part II., No. 2, p. 279.

† Unfallverhütungsvorschriften beim österreichischen Bergbau, I. Nachtrag, Vienna, 1901.

‡ Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1899, Vienna, Part II., No. 2, p. 104.

§ Do. do. do. do. pp. 149 and 150. Also included with Austria in table on page 364.

HUNGARY.

TABLE 389.

PERSONS EMPLOYED at all MINES (including SALT MINES) and SMELTING WORKS during the Years 1899* and 1900.†

Year.	Men.	Women.	Children.	Total.
1899	62,770	2,852	5,686	71,308
1900	67,774	1,855	6,901	76,530

TABLE 390.

QUANTITY and VALUE of MINERALS and METALS produced in 1899† and 1900.†

Mineral, Metal, or Product.	1899.		1900.	
	Quantity.	Value, Unit = 1,000 Czs.	Quantity.	Value, Unit = 1,000 Czs.
	Metric Tons.		Metric Tons.	
Antimony ore	1,965	168.5	2,373	188.6
Antimony, crude, and regulus ...	940	687.2	839	612.8
Asphalt	3,060	322.5	2,900	305.0
Auriferous and argentiferous lead and copper ore.	76,583	1,219.0	124,044	1,243.8
Auriferous silver ore	993	202.0	619	159.1
Bismuth ore	80	51.3	68	41.2
Briquettes	31,137	499.2	69,353	1,157.8
Brown coal	4,292,584	29,300.8	5,130,077	34,331.2
Coal	1,238,855	13,005.0	1,367,190	14,486.8
Copper ore	439	34.7	401	110.4
Gold ore (washed)	7,674	1,085.0	6,246.5	713.8
Iron ore	1,567,860	9,847.3	1,633,983	9,092.6
Iron pyrites	79,519	639.8	92,100	727.7
Iron vitriol	771	12.3	700	11.2
Lead ore... ..	4,165	770.1	3,561	762.9
Manganese ore	5,073	28.4	5,746	31.9
Petroleum	2,125	107.5	2,197	111.9
Quicksilver ore... ..	30	3.9	215	22.0
Salt	182,593	26,994.0	189,363	27,283.0
Silver ore	1,747	147.8	1,144.5	71.6
Sulphur	116	18.0	123	19.1
Total value in Crowns	—	85,144.3	—	91,484.4
„ „ £ sterling	—	£3,544,725	—	£3,808,676

* Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv* New Series VII., 1899, Budapest, p. 122.

† Official Return furnished by the Central Statistical Office, Budapest.

‡ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv* New Series VII., 1899, Budapest, pp. 126 and 129.

§ 3,267 kilos. of fine gold and 20,198 kilos. of fine silver were obtained at the Metallurgical Works in 1900.

HUNGARY—continued.

TABLE 391.

DEATHS at all MINES (including SALT MINES and SMELTING WORKS) during the Years
1899* and 1900.†

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.
1899	106	199	1.49
1900	85	211	1.11
Comparison between 1899 and 1900	-21	+12	-0.38

BOSNIA AND HERZEGOVINA.‡

According to Consul-General Freeman§ mining has been very prosperous, and the number of persons employed has increased considerably. Brown coal, iron ore, and salt are the chief mineral products. Other minerals known to exist are the ores of antimony, arsenic, chromium, copper, gold, lead, manganese, quicksilver, and zinc; besides asbestos, asphalt, magnesite, and petroleum.

Brown Coal.—The principal collieries are at Zenica and Kreka; they are worked by the State. The most important seams are respectively 33 feet (10 metres) and 52½ feet (16 metres) thick. The coal is of Tertiary age. Coal-mining is a new industry, for it dates back only as far as 1880; 500 tons only were raised in that year, whilst in 1899 the total output had risen to 303,425 tons, of which Zenica colliery produced 125,400 tons and Kreka colliery 171,550 tons. Some is exported to towns on the Adriatic. New coal mines§ were opened at Kakanj-Doboj, near the Brodserajevo railway, and the total output of the country increased 30 per cent. in 1900.

Chromic Iron.—A large Viennese company has chromium mines at Dubostica.

Copper Ore.—The ores of this metal are mined and smelted at Sinjako.

Iron Ore§.—The ironworks at Varèš under Government auspices are very successful, and the country's output of iron ore in 1900 was about double that of the previous year.

Salt.—The extraction of salt from natural brine springs dates back, at least, to Roman times, and probably very much further. As in the Austro-Hungarian Empire, the industry is a State monopoly. Numerous borings have proved that the deposits near Dolnja Tuzla are capable of yielding an ample supply of brine in the future, to say nothing of rock salt. Some of the brine from Dolnja Tuzla is piped 6 miles to Lukavac, and there made into soda by the ammonia process.

* Official Return furnished by the Central Statistical Office, Budapest, and published in *Magyar Statisztikai Évkönyv*, Ser. VII., 1899, Budapest, p. 125.

† Official Return furnished by the Central Statistical Office, Budapest.

‡ Poöch, *L'Industrie Minérale de Bosnie-Herzégovine*.—Vienna, 1900. Statistics prepared by the "Bosnisches Bureau, Industrie-Abtheilung," published in the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen*, XLVIII. Jahrgang, 1900.

§ "Trade of Bosnia and the Herzegovina for the year 1900." *Dipl. and Cons. Reports*, No. 2,715, Ann. Ser., 1901 Cl. 786-191, p. 5.

BOSNIA AND HERZEGOVINA—continued.

TABLE 392.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1899 and 1900.

	Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.
	1899	887	235	375	194
	1900	1,105	368	334	222

TABLE 393.

QUANTITY and VALUE of MINERAL produced during the Years 1899 and 1900.

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Florins.	Metric Tons.	Crowns.*
Brown coal ...	303,425	650,026	394,515	1,562,236
Chrome ore ...	196	7,840	100	7,000
Copper ore ...	4,611	35,310	3,614†	54,892
Iron ore ...	67,085	167,670	133,454	584,463
Iron pyrites ...	430	2,150	1,700	6,800
Manganese ore ...	5,625	89,500	7,938	225,000
Salt (Brine) ... (hectolitres)	1,388,047‡	55,502	1,446,048§	115,684
Total value in Florins and Crowns.	—	F. 1,007,998	—	C. 2,556,075
Total value in £ sterling	—	£84,000	—	£106,414

TABLE 394.

DEATHS at MINES during the Years 1899 and 1900.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Brown Coal...	8	—	8	—	—	—	8	7·96
Iron ...	—	—	—	1	—	1	1	2·88
Other ...	1	—	1	—	—	—	1	2·99
Total for 1900.	9	—	9	1	—	1	10	5·53
Total for preceding year.	3	—	3	—	—	—	3	2·00

* New unit of account. 1900 (24 crowns, 2 heller = £1).

† 606 tons of this quantity were Fahlors.

‡ Containing 14,740 metric tons of salt.

§ " 15,790 " " "

Banca and Billiton. (See DUTCH EAST INDIES.)

Bavaria. (See GERMAN EMPIRE.)

Belgium.

There are five coal-mining regions known respectively as the Couchant de Mons, Centre, Charleroi, Namur, and Liège. Of these the Charleroi region is the most productive, for it yields more than one-third of all the coal of Belgium.

M. Harzé, in the preface to the Official Statistics,* describes in general terms the duties of the Government Mining Engineers, which cover a wider field than those of the British Inspectors of Mines. In addition to the ordinary Inspectors, there are 38 workingmen Inspectors (*délégués ouvriers*) appointed under the law of 11th April, 1897.

There are 45 coking plants at work, which produced 2,434,678 tons of coke, besides 40 factories which produced 1,395,910 tons of briquettes.

In spite of the comparative thinness of the seams, coal-mining was carried on with excellent results in 1900, when the profits reached the sum of very nearly 4 millions sterling (fr. 99,870,160), after deducting the losses at 10 collieries, which failed to pay their expenses.† According to an official statement‡ the profits were about £240,000 in 1850, about £1,000,000 a year from 1865 to 1874, about £572,000 a year from 1875 to 1884, £433,880 in 1896, £782,280 in 1897, £930,960 in 1898, and £1,513,720 in 1899.

The workings for mineral in Belgium are classified in the official statistics under three heads: (1) Coal Mines; (2) Ore Mines; (3) Quarries. The following table shows that coal-mining is by far the most important of the mineral industries of the country

TABLE 395.

PERSONS EMPLOYED.§

Kind of Workings.	1899.			1900.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal Mines	92,438	32,820	125,258	98,674	34,075	132,749
Ore Mines... ..	676	817	1,493	633	804	1,437
Quarries (Open and Under-ground)	—	—	36,931	—	—	37,281
Total	—	—	163,682	—	—	171,467

* *Annales des Mines de Belgique*. Vol. VI., 1901, p. 595.

† *Ibidem*, p. 613.

‡ Raikes "Finances and Commerce of Belgium for the year 1900." *Dipl. & Cons. Rep.* No. 2,701. Ann. Series, 1901.

§ *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1899* and corresponding volume for 1900, published in the *Annales des Mines de Belgique*, Vol. VI., Brussels, pp. 603, 634 and 640.

BELGIUM—continued.

TABLE 396.

PERSONS EMPLOYED at COAL MINES during the Years 1899 and 1900.*

Year.	Under-ground.							Above-ground.							Total Under-ground and Above-ground.
	Males.			Females.			Total.	Males.			Females.			Total.	
	Ages.			Ages.				Ages.			Ages.				
	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.		12 to 14.	14 to 16.	Above 16.	12 to 16.	16 to 21.	Above 21.		
1899...	2,015	4,488	85,646	—	—	289	92,438	1,165	1,375	22,320	2,722	3,800	1,438	32,820	125,258
1900...	2,138	4,748	91,597	—	—	191	98,674	1,230	1,452	23,517	2,589	3,787	1,500	34,075	132,749

As shown by table 398 the average output per underground worker was only 238 tons in the year 1900, compared with 374 in this country; the reason of this is the small size of the seams, which on an average are only 2 feet 2·7 inches (68 c.m.) thick.

It was pointed out in the General Report for the year 1897 that the Belgian Government had passed a law with the object of gradually putting a stop to the employment of females below-ground. The accompanying Table shows the complete success of the measures which have been taken. It is evident that within a few years female labour below-ground will become a thing of the past in Belgium. Thirty years ago, from 8,000 to 9,000 girls and women were employed in the Belgian Collieries below-ground.†

TABLE 397.

FEMALES employed BELOW-GROUND at MINES in the Years 1891-1899

Year.	Under 16 Years.	16 to 21 Years.	Above 21 Years.	Total.
1891	685	2,285	723	3,691
1892	219	1,957	719	2,895
1893	44	1,505	623	2,172
1894	—	1,076	542	1,618
1895	—	673	595	1,268
1896	—	291	597	888
1897	—	87	549	636
1898	—	19	405	424
1899	—	—	289	289
1900	—	—	191	191

* *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1899, and corresponding volume for 1900, published in the Annales des Mines de Belgique, Vol. VI., p. 604.*

† Harzé. *Annales des Mines de Belgique, Vol. VI., Brussels, 1901, p. 603-605.*

BELGIUM—*continue* l.
TABLE 398.
COAL MINES.

THICKNESS OF COAL SEAMS, NUMBER OF PERSONS EMPLOYED, AND OUTPUT PER PERSON IN EACH DISTRICT DURING THE YEAR 1900, AND TOTALS FOR THE PREVIOUS YEAR.*

District.	Mean useful thickness of Coal Seam.	Number of Persons Employed.				Ratios.		Number of Square Metres of Seam laid bare.				Annual Output. (Metric Tons.)					Daily Output. (Metric Tons.)						
		Underground.		Above-ground.	General Total.	Of Persons Employed at the Face to those Employed Underground.	Of Persons Employed Underground to Total Number Employed.	Days worked.	In the Year.	Per Year.	Per Worker at the Face.	Per District.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Underground and Above-ground.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Above and Under-ground.	
		At the Face.	Others.	Total.	Of all Classes.																		
Mons ...	Metre. '54	6,158	17,233	23,391	7,075	30,466	'26	'77	300	6,055,520	983	3'28	4,527,650	735	263	194	640	149	2'45	'88	'65	2'13	'50
Centre ...	'64	3,783	11,620	15,403	5,078	20,481	'25	'75	297	4,351,500	1,150	3'87	3,628,780	959	312	236	715	177	3'23	1'05	'79	2'41	'60
Charleroi ...	'74	8,122	23,965	32,087	13,044	45,131	'25	'71	299	8,772,160	1,080	3'61	8,376,200	1,031	349	261	642	185	3'45	1'17	'87	2'15	'62
Namur ...	'80	671	2,015	2,686	993	3,679	'25	'73	297	684,570	1,020	3'43	739,295	1,102	367	275	745	201	3'71	1'24	'93	2'51	'68
Liège ...	'73	5,445	19,662	25,107	7,885	32,992	'22	'76	305	6,369,910	1,170	3'84	6,190,892	1,137	315	247	785	188	3'72	1'05	'81	2'57	'62
Totals and Averages for 1900		24,179	74,495	98,674	34,075	132,749	'25	'74	300	26,233,660	1,085	3'62	23,462,817	970	315	238	689	177	3'23	1'05	'79	2'30	'59
"	1899	22,789	69,649	92,438	32,820	125,258	'25	'74	292	24,719,170	1,085	3'72	22,072,068	968	317	239	672	176	3'31	1'09	'82	2'30	'60

* *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à vapeur, pour l'année 1900, published in the Annales des Mines de Belgique, vol. vi., Brussels, 1901, pp. 606 and 607.*

BELGIUM—continued.

TABLE 399.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES* for the Years 1899 and 1900.†

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
Barytes <i>Metric Tons</i>	25,900	Francs. 181,300	38,800	Francs. 275,500
China clay <i>Cubic Metres</i>	—	—	1,050	13,500
Clay (other than } <i>Metric Tons</i>	291,125	1,994,840	313,205	2,177,700
China Clay).				
Coal "	22,072,068	274,443,900	23,462,817	408,469,800
Felspar <i>Cubic Metres</i>	1,525	16,750	1,960	15,500
Flint for earthenware "	25,185	103,450	25,700	107,200
Iron ore <i>Metric Tons</i>	201,445	1,073,100	247,890	1,320,100
Lead ore... .. "	137	32,700	230	63,280
Manganese ore "	12,120	156,800	10,820	130,350
Marl and chalk... .. <i>Cubic Metres</i>	351,800	577,700	377,550	444,900
Ochre and other colours .. "	300	6,000	300	6,000
Phosphate of lime "	190,090	1,710,900	215,670	1,835,820
Phosphatic chalk "	237,090	1,837,350	242,800	1,728,500
Pyrites <i>Metric Tons</i>	283	1,900	400	1,140
Sand <i>Cubic Metres</i>	627,770	1,208,490	653,780	1,254,980
Slate } <i>Number</i>	44,167,000	1,788,800	43,941,000	1,644,800
	200	1,760	1,410	21,250
Stone :—				
Building stone dressed .. "	139,294	16,245,730	157,294	16,001,240
Conglomerate "	200	27,000	380	39,500
Dolomite "	56,400	99,100	45,000	65,250
Flags <i>Square Metres</i>	144,330	636,775	153,217	716,715
Gravel and broken } <i>Cubic Metres</i>	258,835	609,190	263,850	623,995
stone.				
Hone stones and } <i>Number</i>	82,100	70,800	105,000	75,800
scythe stones.				
Limestone <i>Cubic Metres</i>	195,505	389,780	229,250	445,560
Marble "	17,740	3,005,850	15,990	2,680,700
Millstones "	450	13,000	400	13,400
Paving stone... .. <i>Number</i>	114,103,900	11,182,055	107,294,600	10,961,760
Rough stone, broken } <i>Cubic Metres</i>	3,238,875	13,675,125	3,228,205	15,103,010
stone, and lime.				
Tufa "	21,500	67,000	23,500	47,800
Zinc ore... .. <i>Metric Tons</i>	9,460	855,400	8,715	556,330
Total value in Francs	—	332,012,545	—	466,841,380
.. .. £ sterling	—	£13,280,502	—	£18,673,655

* Excluding the two Flanders and the Province of Antwerp, which only furnish Tertiary clays for making bricks and tiles, and sand used in making glass and for other purposes.

† *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1900*, and published in the *Annales des Mines de Belgique*, vol. vi., Brussels, 1901, pp. 615, 635, 638, and 639.

BELGIUM—continued.

TABLE 400.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1899 and 1900.*

Year.	Kind of Workings.	Under-ground.	Above-ground.	Total.	Number of Deaths per 1,000 Persons Employed.		
					Under-ground.	Above-ground.	Total.
1899	Coal mines	101	20	121	1.09	.61	.97
"	Ore mines	—	—	1†	—	—	.67
"	Quarries (open and underground).	—	—	24†	—	—	.65
1900	Coal mines	120	20	140	1.22	.59	1.05
"	Ore mines	—	—	1†	—	—	.70
"	Quarries (open and underground).	—	—	25†	—	—	.67

Bohemia. (See AUSTRIA-HUNGARY.)

Bolivia.†

Bolivia is remarkable as being the great silver-producing country of South America ; it likewise yields antimony, bismuth, copper, gold, manganese, and tin, besides a little borax.

Bismuth.—This mineral is obtained from the Chorolque mines in the department of Potosi.

Copper Ore.—The copper ore of the Corocoro district is rich enough to pay heavy transport expenses to Mollendo, whence it is shipped to Europe.

Gold.—The precious metal is extracted from alluvial gravels, especially in the Eastern valleys of the Cordillera Real, in the upper branches of the La Paz river, and in valleys radiating from Mount Sorata. Veins of auriferous quartz are being worked with profit in the Araca Mountain, over against Illimani.

Silver.—The richness of the silver mines of the Potosi district has become proverbial ; a few years ago more than one-half of the silver was produced by the Huanchaca mines.

Tin Ore.§—There are four tin-producing districts in Bolivia, viz., La Paz, Oruro, Potosi, and Chorolque ; the tin ore is obtained chiefly from veins.

* *Op. cit.*, pour l'année 1899, pp. 46 and 51, and pour l'année 1900, pp. 668 and 679.

† Not stated whether the accident happened under-ground or above-ground.

‡ Consul St. John, "Trade, &c., of Bolivia for the year 1895." *Dipl. and Cons. Reports*, No. 1841 ; Ann. Ser., 1897 [C. 8277-59], Sir Martin Conway, "Some of the undeveloped resources of Bolivia." *Jour. Soc. Arts*, vol. xlviii., 1900, p. 236.

§ Pasley, "The Tin Mines of Bolivia." *Trans. Inst. M. and M.*, vol. vii., 1898-99, p. 77 ; Roberts, "Chorolque Tin Mines and Alluvial Deposits. Bolivia." *Ibidem*, vol. ix., 1900-01, p. 372 ; and Frochof "L'étain en Bolivie." *Annales des Mines*, vol. xix., 1901, p. 186.

BOLIVIA—continued.

TABLE 401.

(QUANTITY and VALUE of MINERALS produced and exported through the Port of Antofagasta during the Years 1899 and 1900.*

Description of Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore	1,213	1,212,976	873	873,476
Copper, ingots	10	8,171	4	6,352
" matte	627	211,000	3,959	1,425,070
" ore	247	49,371	879	175,760
Gold	Kilos. 5	7,500	Kilos. 3	5,332
Lead, ingots	31	6,134	182	36,453
" silver	1,198	239,505	4,807	961,473
Silver	—	—	Kilos. 83	2,300
" ingots	Kilos. 41,038	2,051,905	" 2,999	149,925
" ore	20,068	20,068,278	23,237	23,236,510
" sulphide... ..	70	2,112,000	104	1,662,968
Silver and copper ore	—	—	6	1,265
Tin, ingots	8,012	3,204,944	10,245	3,910,516
" ore	53	34,472	76	49,371
Wolfram	40	20,203	124	95,376
Other minerals... ..	—	634,267	2,107	749,574
Total value in Dollars	—	29,860,726	—	33,341,721
" " £ sterling	—	£2,239,554	—	£2,500,629

Bonaire. (See DUTCH WEST INDIES.)

Borneo. (See BRITISH BORNEO and DUTCH EAST INDIES.)

Bosnia. (See AUSTRIA-HUNGARY.)

Brazil.

The fact that Brazil produces gold and precious stones leads to the idea that it is an important mining country. No doubt its mineral resources are great ; but judged by the actual output they are not properly utilized. Capitalists and prospectors are discouraged by unsatisfactory mining legislation, which appears to be the main reason why the mining industry is at so low an ebb.† No official statistics are published by the Brazilian Government.

In addition to diamonds and gold, Brazil is yielding coal, iron ore, manganese ore, and monazite sand. Petroleum and the ores of copper and lead exist in workable quantities.

* Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and *Estadística Comercial de la República de Chile correspondiente al Año de 1899 and Año de 1900*, Valparaíso.

† Acting Consul-General Rhind, "Trade of Rio de Janeiro for 1898." *Dipl. and Cons. Reports*, No. 2,284, Ann. Ser., 1899 [C. 9044-110], p. 27.

BRAZIL—continued.

Diamonds.*—Compared with the output of Kimberley, the total production of diamonds in Brazil, estimated at 40,000 carats, is at present insignificant. A powerful company has lately erected machinery for washing the diamondiferous gravel on a large scale, and a very great increase in the total output of the country is confidently expected. The most important diamond districts in Brazil are Diamantina, Grao Mogul, Chapada Diamantina, Bagagem, Goyaz, and Matto Grosso.

Gold.—The State of Minas Geraes, which contains the famous mines of St. John del Rey and Ouro preto, is the principal gold producer.

Gold has also been found in Northern Brazil† on the borders of French and British Guiana, which are both auriferous.

Manganese‡ mining is an industry of comparatively recent date in Brazil. The principal workings are at Miguel Burnier and Queluz in the province of Minas Geraes; respectively 287 miles (462 kil.) and 308 miles (496 kil.) from Rio. The ore is shipped thence to England and the United States. The exports from Rio de Janeiro in 1900 amounted to 88,127 tons.§ There are also mines near Nazareth, 50 miles to the west of Bahia.||

Monazite Sand|| is obtained near the town of Prado in the north of the State of Bahia, and the quantity raised is increasing. Important finds of the mineral have been made in the State of Espirito Santo.‡

Phosphate of Lime.¶—It is proposed to work the phosphate of lime which exists on the Island of Rata, near the Island of Fernando da Noronha.

TABLE 402.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Diamonds (exported) ...	(a)	—	(a)	22,000§
Gold (exported) ...	Kilos. 4,603 ‡	452,000	Kilos. 4,215§	482,000
Manganese ore ‡ ...	Tons. 65,000 (d)	66,000	108,244 (c)	182,539 (c)
Monazite || ...	Bags 5,238 (b)	(a)	1,481 (b)	33,990

* Beaumont, "A Journey to the Diamond Fields of Minas Geraes." *Dipl. and Cons. Reports*, No. 2,058, Misc. Ser., 1899 [C. 9045-22], pp. 10 and 12, and United States Consular Report, No. 424, May 1899.

† Consul Churchill, "Trade of Pará for the years 1898 and 1899." *Dipl. and Cons. Reports*, No. 2389, Ann. Ser., 1900 [Cd. 1-26], p. 6.

‡ Acting Consul-General Rhind, "Trade of Rio de Janeiro for the year 1899." *Dipl. and Cons. Reports*, No. 2,475, Ann. Ser., 1900 [Cd. 1-12], p. 24.

§ Acting Consul-General Rhind, "Trade of Rio de Janeiro for the year 1900." *Dipl. and Cons. Reports*, No. 2,724, Ann. Ser., 1901 [Cd. 786-28], p. 32 and 44.

|| Consul Nicolini, "Trade of Bahia for the year 1899." *Dipl. and Cons. Reports*, No. 2,470, Ann. Ser., 1900 [C. 2-197], p. 11, and Consul Medhurst, "Trade of Bahia for the year 1900." *Dipl. and Cons. Reports*, No. 2696, Ann. Ser. [Cd. 786], 1901, pp. 9 and 12.

¶ Consul Howard, "Trade of Pernambuco and District for the year 1898." *Dipl. and Cons. Reports*, No. 2,288, Ann. Ser., 1899 [C. 9044-114], pp. 9 and 10.

(a) Not stated.

(b) Exports of Bahia only.

(c) Exports of Rio de Janeiro and Bahia—value of exports of Bahia estimated.

(d) Produce of Minas Geraes only.

Bulgaria.*

Bulgaria possesses deposits of coal, lignite, and the ores of copper, iron, lead, and manganese. Gold is obtained from the sand of the rivers at the foot of the Balkans. Limestone and marble are quarried in several places.

The State works lignite mines at Pernik, 19 miles from the capital, and also at Bobov-Dol; the former produces 100,000 tons yearly and the latter 2,000.

The extensive coalfields at Travna,† not far from Tirnovo, are 20 miles from a railway, and cannot therefore be worked with profit at present.

TABLE 403.

QUANTITY of MINERAL produced during the Year 1899.

Mineral.	Quantity raised.
Lignite	Metric Tons. 102,000

Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinder, dug from the sides of volcanic cones, is utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England.

Limestone for local use is derived from Fuerteventura, and to a small extent from Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

Celebes (See DUTCH EAST INDIES).

Chili.

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Other important exports are: borate of lime, coal, copper, guano, gold and gold ore, iodine, manganese ore, salt, and silver.

Borate of Lime.‡—The borate deposit of Ascotan in the interior of Antofagasta is at present the most productive in Chili; from it alone 10,920 tons were shipped in 1900. Valuable deposits, containing more than 600,000 tons of the mineral, are stated to exist within reach of the Port of Taltal.

* *La Bulgarie à l'Exposition Universelle Internationale de 1900 à Paris.* Paris, 1900, p. 43.
† Vice-Consul Brophy, "Trade of Bulgaria for the year 1900." *Dipl. and Cons. Reports*, No. 2642, Ann. Ser., 1901. Cd. 429-100], p. 36.
‡ Vice-Consul Rowley. "Trade of Chili for the year 1900." *Dipl. and Cons. Reports*, No. 2700, Ann. Ser. 1901, pp. 28 and 29.

CHILE—continued.

*Coal.**—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota. Still further South there is coal of Miocene age extending to the Straits of Magellan.

*Copper.**—Copper mining, once the chief mineral industry of the country, is still of considerable importance. The copper resources of the country are said to be great. The total quantity of fine copper contained in the copper produce of Bolivia and Chili exported in 1900 is stated to be 565,062 quintals (26,000 metric tons).†

Guano.—Some persons may object to such recent deposits of bird dung being called minerals, but they are so treated in the official statistics. The guano beds of Guanillos, Punta de Lobos and Pabellan de Pica, lately worked by the Peruvian Corporation Ltd., have now been taken over by the Chilean Government.

Nitrate of Soda.‡—In the year 1900 there were 61 saltpetre works in operation, of which 52 were in Tarapacá; they produced 1,507,799 metric tons of nitrate of soda and 302 metric tons of iodine. Compared with the previous year there is an increase of 67,408 tons of nitrate and 80 of iodine. The diggings and works afforded employment to 19,672 persons, of whom 14,357 were Chileans, 1,998 Peruvians, and 2,414 Bolivians; the remaining 903 persons belonged to various nationalities. The principal port at which the nitrate is shipped is Iquique; Caleta Buena comes next in importance, and then Tocopilla.

Salt.‡—A bed of salt of unknown thickness and extending over an area of more than 20 square miles, near the Punta de Lobos, is being worked on an increasing scale. The export was about 10,000 tons in 1899.

Sulphur.—Native sulphur mines near Arica are being actively worked.§

TABLE 404.

QUANTITY and VALUE of MINERALS exported during the Years 1899 and 1900.||

Description of Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Nitrate of Calcium	14,951	2,242,618	13,177	1,317,676
Borax	14	7,214	27	13,314
Sulphur	20	1,000	—	—
Coal	241,995	4,839,900	325,042	3,900,460
Cobalt ore	55	8,181	27	4,027
Copper, ingots	17,311	14,928,273	20,340	17,899,200
„ matte	1,710	684,965	4,838	1,935,165
„ ore	35,854	3,585,443	20,213	2,021,267
Copper and Gold, ingots	20	20,300	139	138,720
„ „ „ ore	58	8,720	48	27,008
Copper and Silver ore	184	36,799	239	40,722

* Consul-General Sir Barry Ousack-Smith, "Trade of Chili for the year 1899." *Dipl. and Cons. Reports*, No. 2,481. Ann. Ser., 1900 [Cd. 1-118].

† Rowley *op. cit.* p. 48.

‡ *Memoria del Delegado Fiscal de Salitreras presentada al Señor Ministro de Hacienda en 1901.* Santiago de Chile 1901.

§ Rowley, *Op. cit.*, p. 57.

|| Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and published in the *Estadística Comercial de la República de Chile correspondiente al año de 1900*, Valparaíso, 1901, p. 345.

CHILI—continued.

TABLE 404—continued.

QUANTITY and VALUE of MINERALS exported during the Years 1899 and 1900—cont.

Description of Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Copper, Gold, and Silver ore... ..	12	2,633	—	—
Copper, Gold, and Silver matte ...	93	37,162	242	145,067
Copper and Silver matte	1,094	546,880	1,918	1,150,836
Gold	Kilos. 1,625	2,461,234	Kilos. 1,871	2,806,698
Gold ore... ..	12	6,051	129	57,468
Gold and Silver ores	370	129,416	217	34,249
Guano	23,482	939,280	34,435	1,377,400
Iodine	304	4,108,427	318	4,043,172
Lead, silver	171	34,221	14	6,706
Lime	1	42	—	—
Manganese ore	40,931	1,227,922	25,715	761,406
Nitrate of Soda... ..	1,308,718	96,650,282	1,465,935	109,945,156
Silver, ingots	Kilos. 75,899	3,791,589	Kilos. 45,438	2,499,116
„ ore	302	247,597	225	130,957
„ matte	—	—	25	25,300
„ sulphide... ..	339	1,017,110	172	863,332
Silver and Lead ores	32	4,844	1	218
Tin	8	4,979	—	—
Other Minerals... ..	—	64,521	331	495,508
Total Value in Dollars ...	—	137,637,603	—	151,640,148
„ „ „ £ sterling ...	—	£10,322,820	—	£11,373,011

China.*

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of antimony, copper, gold, iron, lead, quicksilver, silver, tin, and zinc, besides petroleum, salt, and sulphur. A good general idea of the distribution of the mineral wealth of China is obtainable from a map accompanying some articles by Mr. Lynwood Garrison.†

The coal-fields of north-eastern China, and especially those of western Chili and eastern Shansi, have lately been described by Mr. Drake.‡

* The "salt wells of China." *Jour. Soc. Arts*, Vol. XLVI., 1898, p. 385.
 Fearon and Allen.—"The Chinese, and recent industrial progress in China." *Eng. Mag.*, Vol. XVI., 1898, p. 166.
 M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.
 Jameson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 365.
 Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV., 1898, p. 491.
 † The Mining and Industrial Development of China" *Mining and Metallurgy*, Vol. XXI., 1901, p. 65.
 ‡ *Trans. Am. Inst. M.E.*, vol. xxxi., 1901.

CHINA—continued.

The province of Sze-chuan,* in the extreme west, is remarkable for its salt and natural gas. The annual output of the brine wells of Tze-liu-ching in Sze-chuan is estimated to be about 178,000 tons of salt.

The province of Chi-li† has yielded gold for many centuries. The metal occurs in quartz veins and in alluvial deposits; the output in 1898 was 50,000 ozs.

Coal and the ores of iron, lead and silver are said to abound in the province of Fohkien.‡

The province of Kwei-chau§ is rich in coal, ores of copper, iron, and quicksilver.

The province of Shan-si|| is remarkable for its great wealth of coal. At the present time the workings are comparatively shallow, and all the winding is done by hand. The total annual output, reckoned at 50,000 tons, is therefore no index of the great resources of the coalfields.

The province of Shan-tung¶ possesses deposits of coal, copper, diamonds, gold, iron, lead, and silver. The first-named mineral is the most important, and is already worked on a small scale and in a very primitive fashion in various parts of the province. No shaft is more than 30 yards (28 m.) deep, and the usual depth is only about 20 yards. It is expected that the harbour of Kiao-chou will shortly be connected by rail with the Wei-hsien coalfield, the first of importance.** An extensive bed of hematite in the neighbourhood of the I-chou-fu coalfield, which can be worked opencast, may be of importance to Kiao-chou in the future.

Consul Jamieson,†† while admitting the great mineral wealth of the province of Yunnan, is of opinion that the difficulties in the way of working are so formidable that capital cannot be profitably employed in mining enterprises, at least in the southern and western sections of the province. Some of the important tin mines‡‡ of Yunnan are situated near Mengtse, not far from the boundary of French Tonquin.

No mineral statistics are published by the Chinese Government.

The Director of the United States Mint states that 8,387 kilos. of fine gold of the estimated value of £1,144,641 were produced in 1899.§§

Cochin China. (See INDO-CHINA.)

Colombia.||||

Coal.—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

Copper.—Deposits are known to exist, but they are unworked.

Emeralds.—The famous mines of Muzo have been worked continuously to obtain this gem for more than three centuries.

Gold.—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

* Upcraft.—"The Salt Wells of Sze-chuan, China." *Eng. Min. Jour.* Vol. LXIX., 1900, p. 525; and Murdoch—"Notes on Brine and Oil Wells in Western China." *Trans. Inst. M. and M.*, Vol. IX., 1900-1, p. 362.

† Hoover—"Metal Mining in the Provinces of Chi-li and Shantung, China." *Proc. Inst. Min. and Met.* Vol. VIII., 1900, pp. 324-331.

‡ Consul Mansfield—"Trade of Amoy for the year 1899." *Dipl. and Cons. Reports.* No. 2502. Ann. Ser. 1900 [Cd. 1-139]. p. 8.

§ Prospectus of the Anglo-French Quicksilver and Mining Concession (Kwei-chau province) of China, Ltd., March 1899.

|| Drake—"The Coalfields around Tse Chou, Shan-si." *Trans. Amer. Inst. M. E.* New York, 1900.

¶ Buhrucker, "Ueber eine bergmännische Forschungsreise in der Provinz Shantung." *Zeitschr. f. prakt. Geologie*, 1899, p. 206.

** Consul Hopkins, "Trade of Chefoo for the year 1898." *Dipl. and Cons. Reports*, No. 2,307, Ann. Ser. 1899 [C. 9044-133], p. 11.

†† China, No. 3 (1898). *Consular Report on the trade of Yunnan.* [C. 9083] 1898.

‡‡ Litton—"Trade of Ssumao and Mengtse." *Dipl. and Cons. Reports*, No. 2,542 Ann. Series, 1900 [Cd. 429], p. 7.

§§ *Report of the Director of the United States Mint for 1900*, Washington, 1901.

|||| Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898.

COLOMBIA—continued.

*Manganese ore.**—This ore is worked about 40 miles east of Colon.

Salt.—Rock salt is mined near Bogota.

TABLE 405.

QUANTITY and VALUE of GOLD, MANGANESE ORE, and SILVER produced during the Years 1898 and 1899.

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
		£		£
Gold (Fine)† Kilos.	3,405	464,723	2,723	371,561
Manganese ore‡ Metric Tons	11,176	(Not stated.)	10,160	(Not stated.)
Platinum‡ Kilos.	(Not stated.)	—	311	(Not stated.)
Silver (Fine)† Kilos.	170,598	1,455,873§	109,555	934,928§

Congo Free State.||

No mines have as yet been worked by Europeans ; but the natives of the Upper Congo dig a little iron ore and copper ore, and extract the metals for the purpose of making weapons, tools and utensils.

Corea.

Corea appears to be rich in minerals, especially in the province of Ping-Yang, where coal and gold are being worked. Large deposits of smokeless coal exist in the country.¶

According to the consular report,** the value of the gold exported from Corea in 1900 was £363,305. The gold is mainly obtained from quartz mines worked by American and European companies. The Gwendoline mine in the Unsan district employs 736 persons, and another gold mine at Tangokae, or Kimo Song, employs more than 500.

Costa Rica.††

A few gold mines are being worked in Costa Rica by companies hailing from the United States. The value of the gold exported probably exceeds £32,000, which is the amount of the official return.

* *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.

† *Report of the Director of the United States Mint for 1900*, Washington, 1901.

‡ *The Mineral Industry*, Vol. IX., 1900, by R. P. Rothwell, New York and London, 1901.

§ Coining value of fine silver.

¶ Information furnished by the Département des Finances, Brussels.

¶ *Eng. Min. Jour.*, Vol. LXVII., 1899, p. 676.

** Gubbins, "Trade of Corea for the year 1900." *Dipl. and Cons. Reports*, No. 2,687, Ann. Series, 1901 [Cd. 429-145]. pp. 4 and 16.

†† Consul Harrison, "Report on the Trade of Costa Rica for the year 1900." *Dipl. and Cons. Reports*, No. 2,661, Ann Series, 1901 [Cd. 429-119].

Cuba.*

The following minerals have been more or less constantly mined in Cuba :—

Asphalt and Petroleum.—There are large deposits in several places.

Clay.—Clay fit for making bricks and tiles is abundant.

Copper ore.—Copper ore has been mined on an extensive scale, particularly at Cobre, in the province of Santiago de Cuba. It occurs in many places in the eastern part of the island.

Gold.—This metal is said to abound in the provinces of Santa Clara and Santiago.

Iron ore.—The latter province possesses extensive deposits of iron ore. The Spanish-American Iron Co. and the Juragua Iron Co. were the two principal producers in 1899, their combined exports during that year amounted to 368,759 tons.

Limestone.—This rock abounds everywhere.

Manganese ore.—This ore is extremely abundant in the province of Santiago. The rich deposits are likely to be utilized in the near future.

Curaçao. (See DUTCH WEST INDIES.)

Denmark.†

Chalk and calcareous marl are quarried near Aalborg. The annual output is from 12,000 to 15,000 tons.

Bog iron ore exists in Jutland,‡ and in years gone by it was occasionally worked and smelted on a small scale.

FAROE ISLANDS.§

For at least two centuries it has been known that the island of Suderö possesses deposits of coal, and it is now rumoured that they will be worked.

GREENLAND.||

The quantity of cryolite obtained from Ivigtut during the year 1899 was 8,874 tons, and in 1900 was 8,960 tons.

During the summer months 100 persons were employed in 1899, and 107 in 1900. These numbers were reduced during each winter by about 50 and 42 men respectively.

No accidents occurred during the years 1899 or 1900.

ICELAND.

A bed of coal has recently been discovered at Nordfjord, in Iceland.

A small quantity of transparent calc spar for optical instruments is exported annually.

* Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines." *Eng. Mag.*, Vol. XVII., 1899, p. 242. Swank. "The American and Foreign Iron Trades in 1899." *U.S. Geol. Survey*, Washington, 1900.

† Consul Boyle, "Trade and Agriculture of Denmark for the year 1898." *Dipl. and Com. Reports*, No. 2,141. Ann. Series. 1898 [C. 9044-127].

‡ *Glückauf*, Vol. XXXIV., 1898, p. 872.

§ "Die Kohlen auf den Färöer." *B.u.h. Zeitung*, Vol. LX., 1901, p. 162.

|| Official Report furnished by the Danish Government.

Dutch East Indies.

A new mining law* for the Dutch Colonies in the East Indies was passed in 1899. It contains provisions with reference to prospecting, concessions, and royalties.

BANCA.†

The alluvial diggings of the Island of Banca still yield large quantities of tin ore.

TABLE 406.

Year.	Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons.
1898-99	14,150	192,973	11,870
1899-1900	14,269	185,974	11,477
1900-1901	14,447	202,728	12,511

The number of persons employed includes not only the actual diggers of the ore, but also the charcoal burners and the smelters.

BILLITON.†

Like Banca, its neighbour Billiton is a large producer of tin ore.

TABLE 407.

Year.	Number of Mines at Work.	Average Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1897-98	85	7,611	87,825	5,402
1898-99	82	7,553	91,912	5,612
1899-1900	‡	6,409	80,203	4,897

BORNEO.†

Coal.—The mines of Mahakkam River at Kutei in South-Eastern Borneo produced 20,000 metric tons of coal in 1897, and 15,221 in 1898, but only 3,910 tons in 1899. Small quantities of coal are raised at Salimbau in Western Borneo, in fact only 300 tons in 1897 and 1898.

* Bisschop and Merriks, *The Mining Law of the Netherlands East Indies*. London, 1899.

† Official Return furnished by the Colonial Department of the Dutch Government.

‡ Figures not available.

DUTCH EAST INDIES—BORNEO—*continued.*

Diamonds.—The estimated output of diamonds from Western Borneo was 1,950 carats in 1898 and 1,972 carats in 1899. Profitable diamond diggings were discovered by chance in the Martapura district of Southern and Eastern Borneo.

*Gold.**—There are three well marked auriferous districts in the island, viz., Sambas in Western Borneo, a second at the sources of the Kehajang and Kapuas rivers in Central Borneo, and a third in the south-eastern corner of the island.

The output of gold from the Western Division of Borneo was 1,820½ thail, or 98 kilograms, valued at fl. 110,595 in 1897, and 2,197¾ thail, or 118 kilograms, valued at fl. 148,297 in 1898, and in the various other divisions the total value was fl. 46,081 in 1897 and fl. 21,000 in 1898.

Petroleum.†—Borneo has lately become a producer of mineral oil. The oil-field is situated in the Sultanate of Kutei, a Dutch protectorate on the East Coast of Borneo. The oil production is already large and has sometimes exceeded 1,000 tons a day. The crude oil is either refined on the spot or shipped direct from Balek Pappan. Steamers are using the crude oil as fuel, and also the liquid residue from the petroleum refineries.

CELEBES.*

Gold.—The precious metal has long been worked by the natives in the northern arm of the island, and within the last decade several European companies have been formed for the purpose of conducting operations on a larger scale.

JAVA.†

Among the mineral productions of Java may be named coal, gold, iodine, manganese ore, and petroleum.

Coal.—798 tons of coal were produced from a mine in the Sedan district during the year 1895–96.

Gold.—The natives, especially the women, obtain some gold by washing river sand in wooden bowls. Several gold mining companies have been started with European capital, and rich gold ore is being exported to Liverpool.

Iodine.—The Gunong Kendeng district has springs containing iodides in solution, from which 2,623 kil. of crude iodide of copper were manufactured in 1898, and 2,346 kil. in 1899.

Manganese.—Manganese ore is produced in the regencies of Pengasih and Nanggoelan. The output was 4,800 tons in 1898 and 1,388 tons in 1899.

Petroleum.—Petroleum occurs in various parts of the island, and is obtained on a large scale by borings. The combined output of the wells at Wonokromo and Blora increased from 1,513,242 cases (1 case = 37·8 litres) in 1898 to 1,638,569 cases in 1899, and to 1,647,114 cases in 1900.

* Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies" *Trans. Inst. M. and M.* Vol. X., 1901, with map.

† Consul Davids, "Trade of Java for the Year 1899." *Dipl. and Cons. Reports*, No. 2452, Ann. Series, 1900 [Cd. 1–89], p. 7. —*Petroleum*, Vol. I., London, 1900, p. 179.—*Shipping and Mercantile Gazette* and *Lloyd's List*, London, 22nd June, 1900; and Official Return furnished by the Colonial Department of the Dutch Government.

DUTCH EAST INDIES—*continued.*

SINGKEP.*

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

TABLE 408.

Year.	Number of Mines at Work.	Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1898-99 	15	2,032	11,237	678
1899-1900 	(a)	(a)	9,533†	575
1900-1901 	16	1,911	13,152	793

(a) Not stated.

About two-thirds of the persons were engaged at the tin diggings proper, and one-third in getting charcoal and smelting the ore.

SUMATRA.*

Coal.—The Dutch Government is working collieries in the Ombilien coalfield, which is now connected by rail with the port of Padang. One of the principal seams is 10 feet thick, and the other from 26 feet to 39 feet. The coal is said to be very free from ash.

Gold.†—The principal gold workings are at Redjang Lebong in the south-west part of the island. Since the beginning of 1898 the mine has yielded 11,308 ozs. of fine gold and 73,493 ozs. of fine silver.

Petroleum.—Sumatra's principal petroleum wells are on the east coast at Langkat; they yielded 5,479,694 cases (1 case=37·8 litres) of refined petroleum in 1898 and 2,543,050 in 1899. The oil is exported to the Straits Settlements, Burmah, Siam, Cochin China, and elsewhere.

TABLE 409.

NUMBER OF PERSONS EMPLOYED AND QUANTITY OF COAL PRODUCED AT COAL MINES in 1899 and 1900.

Year.	Number of Persons Employed.	Quantity of Coal produced.
		Metric Tons.
1899 	2,316	181,743
1900 	2,616	196,206

Dutch Guiana or Surinam.§

According to Du Bois|| mining in Dutch Guiana at the present time is confined almost entirely to the working of gold deposits of secondary origin.

The estimated quantity of gold produced in 1899 was 893 kilograms, valued at fl. 1,223,680 or £101,973, and in 1900, 876 kilograms valued at fl. 1,200,120 or £100,010.

* Official Return furnished by the Colonial Department of the Dutch Government.

† Including 269 pikols from Kedah, Malacca.

‡ Truscott. "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X., 1901, with map.

§ Official Return furnished by the Colonial Department of the Dutch Government and Consul Pigott "Trade of Dutch Guiana, for the year 1900." *Dipl. and Cons. Reports*, No. 2656, Ann. Ser., 1901 [Cd. 429-114], 1901.

|| *Geologisch-bergmännische Skizzen aus Surinam*. Freiberg in Sachsen, 1901.

Dutch West Indies.*

ARUBA.

Gold mining is carried on by an English company. At present the output is small.

Phosphate of lime was quarried with great profit between the years 1884 and 1892 ; in spite of lower prices the deposits are still being worked, and the quantity exported in 1899 was 12,476 tons (20,620 cubic metres), and in 1900, 12,075 tons (20,927 cubic metres), about one half of the quantity shipped comes to Great Britain.

BONAIRE, AND ST. MARTIN.

Salt is obtained by the natural evaporation of sea water at both these islands. In 1899 the export of salt from Bonaire was 28,928 barrels, valued at fl. 14,464 or £1,205, and in 1900 was 112,523 hectolitres, valued at fl. 109,626, or £9,135. From St. Martin in 1899 the export was 24,414 hectolitres, valued at fl. 17,334 or £1,444, and in 1900 28,657 hectolitres, valued at fl. 14,695 or £1,225. The manganese mines of St. Martin have not been worked since 1897.

CURAÇOA.†

The phosphate of lime mines in this island have been at a standstill since 1895. The amount of bay salt produced does not appear to be known exactly.

SABA.

The sulphur deposits are no longer worked.

Ecuador.‡

It is said that gold abounds, though the yearly output is small. It is obtained mainly from alluvial deposits, but the auriferous veins are being tested on a commercial scale.

There are also deposits of anthracite, copper ore, petroleum, salt, and silver ore.§

It is not surprising that one article of commerce of a country possessing active volcanoes should be pumice stone. It is cut up into lumps like bricks.

TABLE 410.

ESTIMATED QUANTITY and VALUE of GOLD and SILVER produced in 1899||.

1899.			
Fine Gold.		Fine Silver.	
Quantity.	Value.	Quantity.	Coining Value.
Kilos. 72	£ 9,836	Kilos. 240	£ 2,053

* Official Return furnished by the Colonial Department of the Dutch Government.

† Consul Jesurun "Trade of Curaçoa for the year 1900." *Dipl. and Cons. Reports*, No. 2,594, Ann. Ser., 1900 [Cd. 429-52], 1901.

‡ Consul Söderström, "Trade of Quito for the year 1897." *Dipl. and Cons. Reports*, No. 2,101, Ann. Ser., 1898 [C. 8643-123].—Consul Chambers, "Trade of Guayaquil for the year 1898." *Dipl. and Cons. Reports*, No. 2,246, Ann. Ser., 1899 [C. 9044-72].—*Report of the Director of the United States Mint for 1899*.

§ *Mining Journal*, Vol. LXX., 1900, p. 620.

|| *Report of the Director of the United States Mint for 1900*, Washington, 1901.

Egypt.

Gems.—The turquoise mines* at Wady Maghara in the peninsula of Sinai are now being reworked; three Englishmen and 162 Bedouins are employed there. So far the gems obtained are poor in quality and small in quantity, probably the best stones are stolen by Bedouins.

Gold.—According to Professor Sayce† vast quantities of gold were obtained in ancient times from mines in the Eastern desert between the Nile and the Red Sea. These old workings are now being explored, and it is possible that they may once more become a source of wealth to Egypt.

Petroleum.‡—The mineral oil at Jebel Zeit on the west shore of the Gulf of Suez has again been examined with a view to ascertaining whether it is worth working.

Phosphate of Lime.§—Large deposits of phosphate of lime have been discovered in several parts of the country.

Salt.||—The natural evaporation of the waters of Lake Mareotis leaves a considerable quantity of salt, and this source of supply is still largely utilized as it has been for many years past. The mineral is likewise being obtained on a large scale, and with profit, near Wady Natroun.

Soda.—It is stated in the Annual Report of the Egyptian Salt and Soda Company, Ltd., that large quantities of natural soda will soon be obtained from the lakes at Wady Natroun, which yielded the mineral to the ancients.

Stone.—Granite, sandstone, and limestone are quarried.

SOUDAN¶ (see also FRENCH SOUDAN).

The possible mineral wealth of the Soudan is practically unknown. Gold mines were once worked in the mountains south of Fazogl. Iron ore is found in Bahr-el-Ghazal Province and also in Darfur.

Faroe Islands (see DENMARK).

Eritrea.

Gold mines are being worked in this Colony by an Anglo-Italian Company.

Formosa.**

The Island of Formosa contains deposits of coal, gold, sulphur, and petroleum.

Coal is mined near Kelung on a small scale, and a few thousand tons are exported annually. It is said that the Japanese are extracting large quantities of gold.

* M.S. communication from Mr. C. A. Moreing.

† Alford "Gold Mining in Egypt." *Trans. Inst. M. & M.*, Vol. X., 1901.

‡ U.S. Consul-General Long. *Consular Reports*, No. 237, Vol. LXIII., June, 1890.

§ "A report on the Phosphate deposits of Egypt." *Geological Survey, Public Works Ministry*, Cairo, 1900.

|| *Prospectus of the Egyptian Salt and Soda Company, Ltd.*, 6th November, 1899, and First Annual Report of the Company for 1900.

¶ Despatch from H.M. Agent and Consul-General at Cairo, enclosing a Report on the Soudan by Sir W. Garstin, K.C.M.G.—*Egypt*, No. 5 (1899) [C. 9332].

** *Mining Journal*, Vol. LXIX., 1899, p. 1024, and *Engineering*, Vol. LXVIII., 1899, p. 337.

France.

Antimony.—Sulphide of antimony is worked in four departments on the mainland and also in Corsica.

Coal.—The total quantity of mineral fuel produced in France in 1900 exceeded 33,000,000 tons. This quantity consists of about 30·95 million tons of coal, 1·76 million tons of anthracite, and ·68 million tons of lignite.

The two great coal-producing departments are the Pas-de-Calais and the Nord. The former yielded nearly 15 million tons, and the latter nearly 6 millions; the two departments together produced over 20 millions, or 61 per cent. of the total output of the country. Next in importance is the Loire Basin with nearly 4 millions. Leseure's historical account* of this colliery district is full of useful and interesting matter.

The total quantity of brown coal produced during the year 1900 amounted to 683,000 tons, or an increase of 76,000 tons. The quantity of peat obtained in 1900 was less than in the previous year.

The Central Committee of French Coal Mines, in its year book for 1901,† publishes much valuable information concerning the mines, together with a reprint of the laws affecting mines and mining.

Iron ore.—87 per cent. of the iron ore raised in France is oolitic hydrated peroxide, which is principally obtained from mines and openworks near Nancy, Longwy, and Briey, in the department of Meurthe-et-Moselle. The iron-producing strata are at the top of the Liassic rocks, and are of the same geological age as those which are so largely worked in the adjoining territories of Lorraine and Luxemburg.

Numerous recent borings have proved the existence of the beds of iron ore over a very considerable area, and the amount of workable iron ore awaiting extraction is stated to be enormous. New mines are being started, and blast furnaces and steel works erected, so that the Longwy district will soon become the most important metallurgical centre in France.

Iron pyrites.—Nearly all the iron pyrites is the produce of the Sain-Bel mines (Rhône).

Lead ore.—The principal lead mine is at Pontpéan in Brittany.

Manganese ore.—Carbonate of manganese is worked on a large scale at Las Cabesses mine (Ariège). The output for 1899 was 21,000 tons of calcined carbonate and 6,000 tons of picked carbonate. Pyrolusite is obtained at the Romanèche and Grand-Filon mines (Saône-et-Loire).

Phosphate of Lime.—M. David Levat‡ has recently made some interesting and important discoveries of black phosphate of lime in the Pyrenees.

Salt.—Much of the salt comes from a thick bed of rock salt in the Upper Trias in the department of Meurthe-et-Moselle. The bay-salt is the result of the evaporation of sea-water in marshes on the shores of the Atlantic and the Mediterranean.

Stone.§—A very large quantity of road metal is supplied to South-east England from quarries at Cherbourg. The stone, which is often called granite, is in reality quartzite.

Zinc ore.—The two largest workings for zinc are those of Malines (Gard) and Bormettes (Var).

* *Historique des Mines de Houille du Département de la Loire*. Saint Etienne, 1901.

† *Comité Central des Houillères de France. Annuaire, 1901*. Paris, 1901.

‡ *Annales des Mines*, Vol. XV. Série 9, 1899, pp. 5-100.

§ Consul Loftus, "Trade of Cherbourg for the years 1899 and 1900." *Dipl. and Cons. Reports*, No. 2670, Ann. Ser., [Cd. 429-128], 1901.

FRANCE—continued.

TABLE 411.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1899 and 1900.*

1899.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	5,622	6,656	97,967	110,245	4,705	2,669	5,571	30,735	43,680	153,925
Other mines	73	173	10,745	10,991	275	297	351	4,124	5,047	16,038
Total	5,695	6,829	108,712	121,236	4,980	2,966	5,922	34,859	48,727	169,963

1900.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	6,025	7,173	103,205	116,403	4,440	2,978	5,719	32,539	45,676	162,079
Other mines	65	247	11,386	11,698	227	295	510	4,085	5,117	16,815
Total	6,090	7,420	114,591	128,101	4,667	3,273	6,229	36,624	50,793	178,894

TABLE 412.

PERSONS EMPLOYED at QUARRIES during the Years 1899 and 1900.*

Kind of Quarries.	1899.			1900.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Underground	13,581	8,988	22,569	13,090	9,072	22,162
Open	—	109,553	109,553	—	108,759	108,759
Total	13,581	118,541	132,122	13,090	117,831	130,921

* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1899 and pour l'année 1900*

FRANCE—continued.

TABLE 413.

QUANTITY and VALUE of the MINERALS raised from MINES and WORKINGS other than QUARRIES during the Years 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Anthracite	1,644,579	—†	1,764,000	—†
Antimony ore	7,392	600,463	7,843	564,015
Arsenic	2,553	103,400	4,705	182,783
Bituminous shale, limestone, &c. ...	258,809	1,848,285	266,474	1,917,149
Brown coal	606,564	5,480,905	682,736	7,436,569
Coal	30,611,569	402,064,660†	30,957,000	491,810,070†
Copper ore	2,021	322,080	3,031	755,451
Gold quartz	320	7,000	50	2,100
Iron ore	4,985,702	18,153,331	5,447,694	20,578,620
Iron pyrites	318,832	4,138,114	305,073	3,899,626
Lead ore, argentiferous	17,505	2,715,729	24,276	3,608,599
Manganese ore	39,897	1,116,686	28,992	850,449
Peat	99,230	1,513,187	95,630	1,434,941
{ Rock salt and salt from brine	283,161	5,160,518	289,169	5,402,122
Salt { Salt contained in brine used	302,327	1,813,362	314,893	1,889,358
{ for making soda				
{ Salt from sea water	608,044	5,560,278	484,572	4,788,385
Sulphur-bearing limestone	11,744	144,419	11,551	132,133
Zinc ore	84,813	9,577,011	67,059	6,111,498
Total value in Francs	—	460,319,428	—	551,363,868
„ £ sterling	—	£18,412,777	—	£22,054,555

TABLE 414.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Aluminous earth	225	1,106	495	1,734
Amblygonite	74	39,238	43	22,899
Amethyst	45	31,500	45	31,500
Barytes	4,058	57,620	3,635	52,413
Bauxite	48,215	419,937	58,530	462,980
Cement	1,144,271	28,667,021	1,147,670	28,981,601
Chalk	46,075	685,415	41,460	659,950
{ China clay	64,200	1,324,030	75,040	1,562,478
{ Fireclay	367,432	1,879,454	329,561	1,699,755
Clay { Potter's clay	5,472,362	7,088,387	5,203,187	6,856,101
{ Stucco	210	12,459	248	14,725
Flagstone	68,650	1,527,202	59,633	1,397,768
Fluor spar	5,140	79,440	3,430	51,705
Fuller's earth	3,900	16,965	3,700	17,900

* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1899, and pour l'année 1900.

† Value included with coal.

‡ Including value of anthracite.

FRANCE—continued.

TABLE 414—continued.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1899 and 1900.*—continued.

Mineral.					1899.		1900.	
					Quantity.	Value.	Quantity.	Value.
					Metric Tons.	Francs.	Metric Tons.	Francs.
Gypsum	Plaster	...	...	...	1,385,867	12,598,880	1,417,845	13,083,710
	Manure	...	...	...	250,079	1,085,162	192,916	963,399
Lignite (Pyritiferous)...					20,030	90,135	19,470	87,615
Lime ...					4,672,799	40,052,764	4,669,241	41,680,518
Lithographic stone ...					247	116,336	454	55,030
Magnesium carbonate...					50	2,500	80	4,000
Marble ...					191,030	7,034,865	154,414	6,140,331
Marl ...					1,238,224	1,505,982	1,040,805	1,281,757
Millstones ...					41,535	3,826,210	41,103	3,651,169
Ochre ...					32,750	807,365	33,080	820,000
Onyx ...					60	3,600	330	28,800
Paving stone ...					621,799	10,536,618	599,492	10,235,965
Phosphate of lime ...					645,868	16,670,726	587,919	14,136,455
Sand, gravel, and flint ...					5,506,966	9,211,804	5,208,284	8,654,946
Slate	Roofing	...	...	...	299,307	18,076,812	290,204	17,199,924
	Slabs	...	...	...	1,162	180,016	1,325	197,000
Steatite, talc, and asbestos ...					4,690	165,250	5,398	190,670
Stone for building ...					10,587,789	52,228,219	9,974,347	48,061,954
„ (broken for ballast) ...					12,523,845	26,950,213	12,229,398	25,904,854
„ for mosaic work ...					2,575	63,625	2,500	62,500
Whetstones ...					2,009	391,130	1,929	395,242
Total value in Francs ...					—	243,428,986	—	234,649,348
„ £ sterling ...					—	£9,737,159	—	£9,385,974

TABLE 415.

DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.*

Kind of Mines.	1899.						1900.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Anthracite, brown coal, and coal.	179	29	208	1.62	.86	1.29	189	41	230	1.62	.89	1.42
Other mines ..	23	5	28	2.11	1.02	1.78	28	2	30	2.38	.39	1.78
Totals	202	34	236	1.67	.70	1.39	217	43	260	1.69	.84	1.45

* Statistique de l'Industrie Minière en France et en Algérie pour l'année, 1899, and pour l'année 1900.

FRANCE—*continued.*

TABLE 416.

DEATHS from ACCIDENTS at QUARRIES during the Years 1899 and 1900.*

Kind of Quarries.	1899.						1900.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Underground ..	40	5	45	2.87	.55	1.95	50	—	50	3.72	—	3.72
Open	—	123	123	—	1.11	1.11	—	127	127	—	1.15	1.15
Total	40	128	168	2.87	1.07	1.25	50	127	177	3.72	1.15	1.25

A very bad accident, on the 28th November, 1900, at the Aniche Collieries, in the Département du Nord, was due to the explosion of some dynamite stored underground. Twenty-one persons were killed. The exact cause of the ignition of the dynamite does not appear to have been ascertained.

French Guiana.†

Like the other Guianas, the French Colony is auriferous, and it is probable that its resources as a gold-producing country are to a great extent undeveloped.

The output of gold in 1900 was 2,170 kilos.

The little island called Grand-Connétable is said to be entirely composed of phosphate of lime; 6,605 tons were raised in 1894; no later figures are available.

TABLE 417.

QUANTITY of GOLD produced in 1899 and 1900.*

1899.*		1900.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 2,541	{ Francs ... 6,993,000 £ sterling 279,720	Kilos. 2,170	{ Francs ... 7,134,000 £ sterling 285,360

* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1899, and pour l'année 1900.*

† Pélatan "Les richesses minérales des colonies françaises." *Revue universelle*, Liège, Vol. LI., 1900, p. 1.

French Possessions (See ALGERIA, FRENCH GUIANA, FRENCH SOUDAN, INDO-CHINA, IVORY COAST, MADAGASCAR, NEW CALEDONIA, SENEGAL, and TUNIS).

French Soudan.

Eighty-four kilograms of fine gold, valued at 289,000 francs, were exported in 1898.*

German East Africa.†

Deposits of coal, gold, iron ore, garnets, mica, and salt are known in the Protectorate.

A rich deposit of coal exists at the north-west end of Lake Nyassa, about 10 miles from the Songwe river.

Gold has been discovered in many parts of the colony.

Garnets have been found at Mpapua and at Newala in the Lindi district; 16 tons were shipped to Europe in 1900.

Salt found in great quantities on the banks of the Malagarasi River forms an important article of barter.

German Empire.

The importance of the mining industry of the German empire is apparent from the following tables, which show that in 1900 its mines employed 566,871 persons, and produced nearly 150 million tons of coal and brown coal, and 12 million tons of iron ore, besides other minerals, with a*total value of nearly 52 millions sterling. The progress of mining during the last 30 years has been enormous. In 1871 the total value of minerals raised was rather more than £15,000,000 sterling; in 1900 it had risen to £62,000,000 sterling. This rise is largely due to the increased output of coal.‡

Amber.§—The shores of the Baltic have been the principal amber-yielding region of the world for many centuries; but Dr. Dahms shows by a map that the Tertiary deposits which carry the fossil resin spread over a large part of Europe, and in fact reach from the Eastern counties of England to the Ural Mountains.

Coal.—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany; the principal workings are in the provinces of Brandenburg and Saxony. The brown coal industry has greatly increased in importance since the manufacture of briquettes began. The output of brown coal has almost doubled in the last 10 years.||

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1898*, p. 87.

† Acting Vice-Consul Hollis "Report for the year 1900 on German East Africa." *Dipl. and Cons. Reports*, No. 2,508 Ann. Ser. [Cd. 429-26], 1901.

‡ Exposition Universelle de 1900, *Catalogue Officiel de la Section Allemande*, p. 277.

§ Dahms "Vorkommen und Verwendung des Bernsteins." *Zeitschr. f. p. Geologie*, Vol. IX., 1901, p. 201.

|| "Die Braunkohlen im Deutschen Reich, deutscher Kohlenverbrauch und ausserdeutsche Kohलगewinnung während der Jahre, 1891-1900." *Vierteljahrshefte zur Statistik des Deutschen Reichs*. Jahrgang, 1901, II.

GERMAN EMPIRE—*continued.*

There are three principal coal-mining districts in Prussia: (1) The Lower Rhine and Westphalian Basin, which is by far the most important; (2) Silesia, and especially Upper Silesia; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age; near Hanover there are extensive workings in the Wealden beds.

A general resumé of the coal trade in Germany from 1891 to 1900* shows that the total output of coal has risen from 73·7 million tons in 1891 to 109·2 million tons in 1900. The proportion of the output obtained from mines worked by the State has risen in the decade 1881–1890 from 6·7 to 10·4 per cent. at the present time.

Copper.—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

Iron Ore.—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. These sources of supply are, however, of far less importance than the stratified ore of Jurassic age in Luxemburg and Lorraine. Indeed, the iron-field upon the confines of France and Germany is at the present moment the greatest ore-producer of Europe. It is estimated that Luxemburg possesses 14 sq. m. (37 sq. km.), Germany 160 sq. m. (414 sq. km.), and France 208 sq. m. (540 sq. km.) of iron territory, in which ore can be raised at a profit. The so-called “iron-ore formation” consists of five main beds of oolitic iron ore interstratified with marl and limestone, with an average thickness of 105 ft. (32 m.), of which rather more than one-half is available iron ore. The ore contains on an average 36 per cent. of iron and 1·7 per cent. of phosphoric acid.†

Lead Ore.—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Prussia.

Salts.—In no country in the world is there such an abundance of potassium salts as in Germany. They are mined in the province of Prussian Saxony and the Duchy of Anhalt; of late years Hanover has had a share in the production of these important and not very widely spread minerals, and a mine in Brunswick added to the yield in 1897. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

Zinc Ore.—Upper Silesia is the mainstay of the German zinc industry.

A new code of regulations‡ has been established for the collieries in the Dortmund district, and it will come into force on the 1st January, 1902. It deals principally with ventilation, coal dust, blasting and lighting, and contains in all 57 rules.

The quantity of fresh air which has to be furnished to the underground workings is raised from 2 cubic metres (70 cubic feet) to 3 cubic metres (105 cubic feet) per person per minute; on the other hand the additional 10 cubic metres per horse are no longer required.

The air currents must be produced by mechanical ventilators; these must be provided with self-registering water gauges indicating continuously the depression produced, and the diagrams must be preserved for three months.

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*, Jahrgang, 1901, I.

† Hoffmann, “Das Vorkommen der oolithischen Eisenerze (Minette) in Luxemburg und Lothringen.” *Glückauf*, Vol. XXXV., 1899, p. 640.

‡ *Bergpolizei-Verordnung betreffend die Bewetterung der Steinkohlenbergwerke und die Sicherung derselben gegen Schlagwetter- und Kohlenstaub-Explosionen*, Dortmund, December, 1900.

GERMAN EMPIRE—continued.

TABLE 418.

PERSONS EMPLOYED at the MINES of the GERMAN EMPIRE.

Mineral.	1899.*				1900.†			
	Under-ground.	Above-ground.		Total Under and Above Ground.	Under-ground.	Above-ground.		Total Under and Above Ground.
		Males.	Females.			Males.	Females.	
I.— <i>Coals and Asphalt.</i>								
Asphalt	116	121	—	237	124	160	10	294
Brown coal	20,404	23,205	1,136	44,745	23,160	26,503	1,248	50,911
Coal... ..	290,951	82,796	4,828	378,575	316,883	91,796	5,014	413,693
Graphite	774	402	—	1,176	300	276	—	576
Petroleum	—	491	—	491	—	602	—	602
Total	312,245	107,015	5,964	425,224	340,467	119,337	6,272	466,076
II.— <i>Salts.</i>								
Boracite†	—	—	—	—	—	—	—	—
Kainite	1,309	1,344	9	2,662	1,630	1,756	4	3,390
Magnesium salts	—	48	—	48	—	—	—	†
Potassium salts other than kainite ...	4,894	2,901	3	7,798	5,183	3,254	1	8,438
Rock salt	470	350	10	830	699	521	13	1,233
Total	6,673	4,643	22	11,338	7,512	5,531	18	13,061
III.— <i>Ores.</i>								
Arsenic ore	193	191	—	384	215	193	—	408
Cobalt, nickel, and bismuth ores ...	446	155	28	629	460	174	8	642
Copper ore	11,725	3,183	3	14,911	12,253	3,325	9	15,587
Iron ore	23,971	9,453	1,436	34,860	25,739	10,486	1,371	37,596
Iron pyrites	333	199	—	532	374	212	—	586
Lead ore	8,238	5,211	354	13,803	8,980	5,577	408	14,965
Manganese ore	437	87	3	527	408	128	4	540
Quicksilver ore	—	—	—	—	3	—	—	3
Silver and gold ores	2,382	832	—	3,214	2,163	762	—	2,925
Tin ore	14	33	—	47	18	36	—	54
Uranium and tungsten ores	32	40	—	72	42	20	—	62
Zinc ore	7,991	4,139	2,452	14,582	7,630	4,086	2,648	14,364
Other ores	2	2	—	4	—	2	—	2
Total	55,764	23,525	4,276	83,565	58,285	25,001	4,448	87,734
Total for the German Empire	374,682	135,183	10,262	520,127	406,264	149,869	10,738	566,871
Grand Duchy of Luxemburg—iron ore	3,714	2,343	—	6,057	3,852	2,355	—	6,207

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1900, Berlin, IV. Heft.

† 1901

‡ Persons employed included under the heads of Kainite and Potassium Salts other than Kainite.

GERMAN EMPIRE—continued.

TABLE 420—continued.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1899 and 1900—continued.

Mineral.	1899.		1900.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES—cont.	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Manganese ore	61,329	711	59,204	734
Silver and gold ores	13,506	1,919	12,593	2,059
Tin ore	72	40	80	45
Uranium and tungsten ores	50	52	43	46
Vitriol and alum ores, other than iron pyrites.	533	3	350	2
Zinc ore	664,536	35,420	639,215	25,753
Total value	—	132,121	—	136,531
Total value for the German Empire in marks.	—	1,038,641	—	1,249,417
Total value for the German Empire in £ sterling.	—	£51,932,050	—	£62,470,850
Grand Duchy of Luxemburg—iron ore	6,014,394	12,990	6,171,229	13,827

TABLE 421.

QUANTITY and VALUE of MINERALS produced from BRINE, &c. WELLS during the Years 1899 and 1900.

Mineral Solution.	1899.*		1900.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
1. Alkaline sulphates :—				
(a.) Potassium sulphate... ..	26,103	4,110	30,853	4,997
(b.) Potassium and magnesium sulphate.	9,765	780	15,368	1,122
(c.) Sodium sulphate	79,062	2,016	90,468	2,655
2. Earthy sulphates :—				
(a.) Aluminium sulphate	37,693	2,273	44,372	2,700
(b.) Alum... ..	3,358	294	4,355	375
3. Magnesium chloride	21,370	325	19,397	305
4. Magnesium sulphate	39,540	594	48,591	612
5. Potassium chloride	207,506	27,205	271,512	35,175
6. Salt (sodium chloride)	571,058	12,087	587,464	14,268
Total value in marks	—	49,684	—	62,209
" " £ sterling	—	2,484,200	—	£3,110,450

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1900. Berlin, IV. Heft.

† " " " " " " " " 1901 " "

GERMAN EMPIRE—continued.

TABLE 425.

Iron Ore.

State.	1899.*		1900.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine	6,972,758	18,684	7,742,315	22,232
Bavaria	184,020	807	179,920	826
Brunswick	139,000	291	184,366	411
Hesse	160,766	1,277	189,697	1,609
Prussia	4,295,575	35,124	4,268,069	37,686
Saxe-Meiningen	123,989	499	134,009	543
Waldeck... ..	31,200	126	30,798	154
Other German States	67,933	372	63,891	340
Total value in marks... ..	11,975,241 {	57,180	12,793,065 {	63,801
" " £ sterling		£2,859,000		£319,005
Grand Duchy of Luxemburg	6,014,394 {	12,990	6,171,229 {	13,827
		£649,500		£691,350

TABLE 426.

Silver and Gold Ores.

State.	1899.*		1900.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Saxony	13,498	1,797	12,593	2,059
Other German States	8	122		
Total value in marks... ..	13,506 {	1,919	12,593‡ {	2,059
" " £ sterling		£95,950		£102,950

According to a return§ of the mining branch of the great industrial insurance scheme of the German Empire, which numbers more than half a million members, the deaths from accidents among persons employed in and about mines and smelting works have been as follows :—

TABLE 427.

DEATHS FROM ACCIDENTS AT MINES AND OTHER MINERAL WORKINGS IN GERMANY.

Year.	Deaths which occurred in the same year as the accident.		Total Deaths, including those which took place after the close of the year in which the accident happened.	
	Number of Deaths.	Number of Deaths per 1,000 Persons Employed.	Number of Deaths.	Number of Deaths per 1,000 Persons Employed.
1891	977	2.32	1,030	2.45
1892	830	1.96	875	2.06
1893	920	2.19	964	2.29
1894	786	1.84	826	1.94
1895	912	2.12	954	2.22
1896	971	2.18	1,012	2.27
1897	961	2.05	992	2.12
1898	1,254	2.53	1,280	2.59
1899	1,060	2.03	1,072	2.06
1900	1,145	2.02	—	—

* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1900, Berlin, IV. Heft.

† 99 kilos. of fine gold and 168,349 kilos. of fine silver were extracted from these ores at the Metallurgical Works in 1900.

‡ Sechszehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1900, Berlin, p. 29.

GERMAN EMPIRE—continued.

TABLE 428.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1900.*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines	55,178	117	1	118	2.14
Coal mines	403,514	895	3	898	2.22
Ore mines and smelting works... ..	79,420	89	—	89	1.12
Salt mines and brine works	19,858	31	—	31	1.56
Other mineral workings... ..	7,090	9	—	9	1.27
Total	565,060	1,141	4	1,145	2.02

TABLE 429.

ACCIDENTS CLASSIFIED so as to show whether they were due to the WORKMEN'S NEGLIGENCE, Year 1900.†

Section	Accidents.								Total Number of Accidents.
	Owing to Danger Inherent to the Work itself.		By Defects in the Working.		Through Fault of Fellow Workman.		Through Fault of Injured Person.		
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
1. Bonn	780	72.26	5	0.47	27	2.52	260	24.25	1,072
2. Bochum	2,333	73.46	14	0.44	98	3.08	731	23.02	3,176
3. Clausthal	121	69.94	—	—	3	1.74	49	28.32	173
4. Halle	265	43.02	11	1.79	37	6.00	303	49.19	616
5. Waldenburg	116	81.12	—	—	4	2.80	23	16.08	143
6. Tarnowitz	851	61.20	16	1.20	49	3.50	475	34.10	1,391
7. Zwickau	162	64.29	6	2.39	20	7.93	64	25.39	252
8. Munich	61	91.05	—	—	—	—	6	8.95	67
Total	4,689	68.06	52	0.75	238	3.45	1,911	27.74	6,890

This table is of importance as it seems to refute the common statement that the majority of the accidents are due to the carelessness of the injured persons. In the year under review only 27.7 per cent. were so caused, whereas in 1893 the corresponding percentage was 41.9. However, too much stress must not be placed upon these figures, as it is left to the officials at the mines to settle the heading under which the accident should be arranged.

* *Sechszehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1900*, Berlin, 1901, pp. 50-53.

† *Ibid.* p. 29.

GERMAN EMPIRE—continued.
TABLE 430.

PERSONS INJURED BY ACCIDENTS IN AND ABOUT QUARRIES, who received compensation during the 10 years 1891 to 1900.*

1. Year.	(a) Number, Age, and Sex of Persons Injured.						(b) Cause of Accident.														(c) Consequence of the Injury.										
	Adults.			Young Persons Under 16.			Per 1,000 Persons Insured.	9. Motors, Belts and Gearing, Transmissions and Working Machines.	10. Cages, Lifts, Cranes, Hoists.	11. Steam Boilers and Steam Pipes.	12. Explosions.	13. Burns or Scalds from Hot Gases, Steam, &c.	14. Falls of Ground or of Materials.	15. Falls from Ladders, Steps, &c., out of Windows, &c., into Holes, &c.	16. Loading or unloading, Lifting, Carrying, &c.	17. Run over by Carts, Waggon, &c.	18. Railways, Run over, &c.	19. Ships, Boats, Barges, &c., Falling Overboard, &c.	20. Animals (Blows, Kicks, Bites, &c.), including all Accidents in Riding.	21. Handtools (Hammer, Axe, Pick, Spade, &c).	22. Miscellaneous.	Deaths.		Lasting incapacity for Work.		27. Temporary Incapacity for Work.	Number of the dependent relatives of persons killed entitled to compensation.				
	M.	F.	4.	M.	F.	6.																7. Total.	23. Number.	24. Per 1,000 Persons Insured.	25. Complete.		26. Incomplete.	28. Widows.	29. Children.	30. Other Dependent relatives.	31. Total.
1891	253,250	1,190	2	9	—	1,201	4.7	77	34	4	67	1	340	153	138	59	105	30	8	142	43	197	0.77	44	751	208	124	274	6	404	
1892	252,800	1,155	—	5	—	1,160	4.6	64	17	4	72	6	306	122	148	66	107	17	7	199	25	176	0.69	23	760	201	115	281	11	407	
1893	227,500	1,168	—	7	—	1,175	5.2	62	19	13	57	6	333	135	171	62	112	7	8	164	22	187	0.82	26	735	227	133	325	11	460	
1894	226,300	1,295	7	17	—	1,319	5.8	69	32	9	81	6	384	142	163	84	99	15	7	195	33	196	0.86	28	861	234	134	285	12	431	
1895	228,000	1,333	1	20	—	1,354	5.9	81	46	9	68	14	369	165	159	90	114	7	6	201	31	171	0.75	18	781	384	121	206	30	357	
1896	252,200	1,305	2	25	—	1,332	5.3	77	28	4	65	12	372	171	175	78	123	6	7	182	32	171	0.67	16	760	385	108	278	7	393	
1897	330,882	1,537	3	13	1	1,554	4.7	85	29	1	90	15	442	204	173	92	191	10	7	180	35	228	0.68	11	882	433	156	330	15	501	
1898	369,257	1,587	7	22	—	1,616	4.4	111	40	6	82	12	406	212	187	98	219	15	13	198	17	249	0.67	16	912	439	160	399	11	570	
1899	416,095	1,885	2	15	—	1,902	4.5	123	54	1	111	18	469	264	203	124	234	9	11	262	19	257	0.62	22	969	654	153	351	13	517	
1900	419,144	1,947	4	22	—	1,973	4.7	167	71	1	113	18	466	295	169	102	232	13	19	281	26	272	0.65	19	991	691	180	393	13	586	

* *Verwaltungs-Bericht des Vorstandes der Steinbrüche-Berufsgenossenschaft für das XV. Rechnungsjahr 1900*, Berlin, 1901, p. 8.

The figures in Column 2 represent the total number of persons employed in a quarry at any time during the year for however short a period. The number of persons employed full time, reckoning 300 days work a year for each person, is given as 153,446 in 1899 and 158,609 in 1900.

The number of deaths in column 23 represents the number of cases dealt with by the Insurance Board during the year, and differs slightly from the number reported as occurring during the year, which is stated as 263 in 1899 and 267 in 1900.

GERMAN EMPIRE—continued.

Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

BAVARIA.*

TABLE 431.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1899 and 1900.

Kind of Mines or Mineral Workings.	1899.		1900.		Kind of Mines or Mineral Workings.	1899.		1900.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Arsenic ore ...	—	—	10	31	Ochre, &c. ...	95	131	105	146
Barytes ...	122	353	195	296	Paving stones ...	313	926	312	3
Basalt ...	758	1,820	1,199	1,722	Petroleum... ..	18	10	18	—
Brown coal ...	158	266	194	217	Porcelain earth ...	115	361	210	168
Cement marl ...	391	336	778	249	Salt, rock ...	96	140	133	173
Coal ...	6,265	12,637	6,757	13,213	„ from brine ...	215	631	227	697
Copper ore ...	27	36	60	112	Sand ...	35	111	46	10
Emery ...	8	28	9	19	Sandstone† ...	1,234	3,617	1,339	2,770
Feldspar ...	14	47	15	30	Slate (roofing and slabs). ...	127	277	124	178
Fireclay ...	561	1,638	652	1,571	Steatite ...	74	228	75	214
Fluorspar ...	28	114	32	121	Whetstone ...	10	—	2	8
Gold and Silver ...	—	—	8	18	Zinc and Lead ...	—	—	21	42
Granite ...	3,090	7,525	3,757	1,819					
Graphite ...	1,176	268	576	432					
Gypsum ...	28	3	163	8					
Iron ore ...	722	1,901	772	1,985					
Iron pyrites ...	42	110	39	102					
Limestone ...	595	1,476	724	818					
Manganese ore ...	1	—	1	—					
					Total ...	16,318	34,990	18,553	27,172

TABLE 432.

QUANTITY and VALUE of MINERALS obtained during the Years 1899 and 1900.

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ...	6,215	34,570	10,515	60,269
Basalt ...	317,761	613,138	397,062	1,022,242
Brown coal ...	35,736	132,912	34,171	140,501
Cement marl ...	220,716	319,667	180,032	296,218
Coal ...	1,004,421	10,593,105	1,078,836	12,609,218
Emery ...	400	16,720	414	17,721
Feldspar ...	287	4,340	460	6,890
Fireclay... ..	271,792	2,020,133	187,501	1,854,756
Fluorspar ...	3,631	23,463	7,456	42,274
Granite ...	181,876	1,992,019	209,350	2,299,535
Graphite ...	5,196	481,170	9,248	546,480

* Return furnished by the Royal Bavarian Mining Department, Munich.

† Figures incomplete.

GERMAN EMPIRE.—BAVARIA—*continued.*TABLE 432—*continued.*QUANTITY and VALUE of MINERALS obtained during the Years 1899 and 1900—*cont.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Gypsum... ..	29,727	82,607	35,484	68,797
Iron ore... ..	181,981	777,392	178,441	799,970
„ pyrites... ..	2,516	30,755	2,120	25,370
Limestone... ..	267,180	375,566	297,635	445,842
Lithographic stone... ..	11,962	956,960	16,030	1,312,400
Melaphyre... ..	308,836	926,508	313,928	941,784
Ochre, &c... ..	9,287	133,406	11,507	100,314
Paving stones... ..	20,195	383,610	16,268	307,592
Petroleum... ..	68	6,120	47	4,700
Porcelain earth... ..	25,822	94,292	58,795	273,097
Salt, rock... ..	802	26,440	1,298	26,249
„ from brine... ..	41,207	1,690,566	46,293	1,931,187
Sand... ..	39,922	67,999	42,671	80,185
Sandstone... ..	315,786	1,671,669	314,154	1,515,180
Slates (roofing and slabs)... ..	2,067	91,661	1,904	85,830
Steatite... ..	2,197	135,440	1,977	128,960
Whetstone... ..	81	4,800	25	2,000
Total value in Marks... ..	{ — }	23,687,028	{ — }	26,945,561
„ „ £ sterling... ..	{ — }	£1,184,351	{ — }	£1,347,278

PRUSSIA.

TABLE 433.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1899 and 1900.*

Kind of Mines or other Mineral Workings.	1900.				Total for preceding year
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal... ..	15,360	10,815	16,175	42,350	37,017
Coal... ..	289,670	—	87,715	377,385	344,368
Ore... ..	45,591	1,774	22,503	69,868	67,458
Other mineral workings... ..	7,763	1,674	8,124	17,561	16,242
Total... ..	358,384	14,263	134,517	507,164	465,085

* Zeitschr. B. H. S. W., Vol. XLIX., p. 48.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 434.

(QUANTITY and VALUE of MINERALS obtained from MINES during the Years 1899 and 1900.

Mineral.	1899.*			1900.†		
	Number of Mines.	Output.		Number of Mines.	Output.	
		Quantity.	Value.		Quantity.	Value.
I.—Coals and Asphalt.						
		Metric Tons.	Marks.		Metric Tons.	Marks.
Asphalt	3	16,458	164,595	3	23,891	238,910
Brown coal	397	28,418,598	63,506,047	400	34,007,542	80,257,926
Coal	274	94,740,829	717,137,810	283	101,966,158	878,251,112
Petroleum	6	3,405	366,856	8	27,731	2,485,730
Total	680	123,179,290	781,175,308	694	136,025,322	961,183,678
II.—Salts.						
Boracite (pure)	—	171	33,349	—	217	41,044
Kainite	13	744,657	10,236,676	16	857,271	12,147,087
Magnesium salts	1	1,794	14,703	—	1,511	12,462
Potassium salts, other than kainite.	12	941,055	10,488,594	9	1,264,993	14,395,301
Rock salt	5	331,943	1,565,614	9	354,603	1,670,741
Total	31	2,019,620	22,338,936	34	2,478,595	28,266,635
III.—Ores.						
Arsenic ore	1	3,265	209,626	1	3,531	265,613
Cobalt ore	2	17	3,400	2	4	640
Copper ore	37	722,884	20,551,633	41	736,586	23,373,875
Gold and silver ore	2	7	122,189	2	1	30,664
Iron ore	486	4,295,575	35,123,570	492	4,268,069	37,686,380
Iron pyrites	6	134,564	938,386	4	159,186	1,120,932
Lead ore	163	128,942	13,907,895	174	133,483	17,828,139
Manganese ore	23	60,379	635,784	21	58,016	661,052
Nickel ore	3	91	4,268	3	3,896	77,953
Quicksilver ore	1	—	—	1	—	—
Vitriol ores and alum ores, other than iron pyrites.	—	145	867	—	103	617
Zinc ore	65	663,763	35,388,158	60	636,068	25,591,722
Total	789	6,009,632	106,885,776	801	5,998,943	106,631,587
Gross Total	1,500	131,208,542	910,400,020	1,529	144,502,860	1,096,087,900
Total value in £ sterling	—	—	£45,520,001	—	—	£54,804,395

* Zeitschr. B. H. S. W., Vol. XLVIII., p. 20.

† Zeitschr. B. H. S. W., Vol. XLIX., p. 20.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 435.

QUANTITY and VALUE of SALTS obtained from BRINE WELLS, &c. during the Years 1899 and 1900.

Description of the Product.	1899.*					1900.†				
	Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.		Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.	
	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.
1. Alkaline Sulphates:—			Metric Tons.	Metric Tons.	Marks.			Metric Tons.	Metric Tons.	Marks.
(a) Potassium sulphate ..	1	8	41,787	19,026	3,089,910	2	9	30,935	22,577	3,683,337
(b) Potassium and magnesium sulphate.	—	6	†	8,169	665,365	—	7	19,800	9,736	745,327
(c) Sodium sulphate ..	8	8	38,955	55,253	1,371,701	8	7	40,769	49,628	1,241,050
2. Earthy Sulphates:—										
(a) Aluminium sulphate..	5	1	9,923	11,731	705,593	5	—	11,469	12,214	792,274
(b) Alum	2	1	819	664	63,316	2	1	695	1,188	111,761
3. Magnesium chloride ..	—	2	18	6,634	101,399	—	2	19	6,518	115,274
4. Magnesium sulphate ..	—	6	35	26,466	404,361	—	8	3,135	23,553	331,531
5. Potassium chloride ..	10	3	819,075	119,123	15,157,577	12	3	1,079,237	169,171	21,416,385
6. Salt (sodium chloride) ..	35	5	92,683	288,588	6,580,730	35	5	87,140	287,005	7,059,356
Total	61	40	1,003,295	535,654	{ 28,139,752 £1,406,988 }	64	42	1,273,199	681,590	{ 35,496,285 £1,774,815 }

TABLE 436.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1900 and preceding Year.§

Kind of Mines or other Mineral Workings	1900.				Total for preceding year.
	Number of Deaths.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal	55	15	30	100	72
Coal	722	—	126	848	797
Ore	59	7	12	78	94
Other mineral workings	16	7	4	27	20
Total	852	29	172	1,053	983

* Zeitschr. B. H. S. W., Vol. XLVIII., p. 21.

† Zeitschr. B. H. S. W., Vol. XLIX., p. 21.

‡ Included with 1 (a) and 5.

§ Zeitschr. B. H. S. W., Vol. XLIX., p. 51.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 437.

DEATH-RATES from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1900 and preceding Year.*

Kind of Mines or other Mineral Workings.	1900.				Total for preceding year.
	Death-rate per 1,000 Persons Employed.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal	3.58	1.39	1.85	2.36	1.95
Coal	2.50	—	1.44	2.25	2.31
Ore	1.29	3.94	.53	1.12	1.39
Other mineral workings	2.06	4.18	.49	1.54	1.23
Total	2.38	2.03	1.28	2.08	2.11

TABLE 438.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS, classified according to kind of MINERAL WORKED, and cause of ACCIDENT, during the Year 1900, and the DEATH-RATE for 1899.†

Cause of Accident	Deaths from Accidents					Death-rate per 1,000 Persons Employed.	
	Brown Coal Mines.	Coal Mines.	Ore Mines.	Other Mineral Workings.	Total.	1900.	1899.
Blasting	—	49	5	3	57	.16	.12
Falls of ground	29	335	35	4	403	1.12	1.19
On inclines and intermediate shafts.	2	145	4	2	153	.43	.45
In shafts	6	73	13	6	98	.27	.32
In levels	2	40	2	—	44	.12	.11
Explosion of fire-damp, coal dust, or gases generated by fires.	—	20	—	—	20	.06	.08
Suffocation by natural gases (without explosion), or gases generated by fires (without explosion), or blasting.	9	25	—	—	34	.09	.11
Machinery... ..	—	6	—	—	6	.02	.01
Irruptions of water	6	1	—	—	7	.02	.02
In open workings	15	—	7	7	29	2.03	1.45
On surface... ..	30	126	12	4	172	1.28	1.08
Sundries	1	28	—	1	30	.08	.11
Total	100	848	78	27	1,053	2.08	2.11

* Zeitschr. B. H. S. W., Vol. XLIX., p. 51.

† Ibid., pp. 48-51.

GERMAN EMPIRE.—PRUSSIA—*continued.*

The three worst accidents* in the year were a fall of ground which killed six persons, another similar accident claiming five victims, and a fire-damp explosion which likewise caused five deaths.

In addition to the accidents by explosions of fire-damp there are occasional casualties due to suffocation by this gas, the average for the last decade is 2·3 persons so killed annually.

TABLE 439.

EXPLOSIONS OF FIRE-DAMP OR COAL DUST classified according to CAUSE.†

Cause.		1899.			1900.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.
I. Lighting	1. Naked lights ...	1	5	6	1	10	11
	2. Matches or smoking	2	3	5	—	2	2
	3. Illegally opened ...	—	1	1	2	1	3
	4. In defective condition or injured during work.	1	8	9	4	9	13
	5. Gauze becoming red hot.	—	2	2	—	1	1
	6. Oil or soot on gauze taking fire	—	—	—	—	—	—
	7. Passage of flame when relighting by amorces.	—	—	—	—	—	—
	8. Flame driven through gauze by ventilating current:						
	(a) In consequence of careless handling of lamp.	3	9	12	3	10	13
	(b) In consequence of the ventilating current being too rapid.	2	1	3	—	—	—
II. Shot firing	9. ...	2	5	7	3	10	13
	10. Ventilating furnaces	—	—	—	—	—	—
III. Underground fires.	11. Accidental or spontaneous ignition of mineral, timber, or other material.	1	1	2	—	—	—
	12. Sparks from tools ...	—	—	—	—	—	—
IV. Miscellaneous	13. Sundries or unknown	—	1	1	—	1	1
Total ...		12‡	36	48	13§	46	59

* *Zeitschr. B. H. S. W.*, Vol. XLIX., p. 52.† *Ibid.*, p. 69.‡ Causing 25 deaths, *Ibid.*, Vol. XLVIII., p. 68.§ " 19 " *Ibid.*, Vol. XLIX., p. 65.

GERMAN EMPIRE—*continued.*

SAXONY.*

TABLE 440.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.

Kind of Mines.	1899.			1900.		
	Males.	Females.	Total.	Males.	Females.	Total.
Brown coal	2,438	146	2,584	2,836	139	2,975
Coal	22,784	369	23,153	23,913	397	24,310
Ore	4,199	—	4,199	3,861	—	3,861
Total	29,421	515	29,936	30,610	536	31,146

According to the Saxon Year-book, 84,700 persons were dependent upon the 29,936 workers in and about mines.

TABLE 441.

QUANTITY and VALUE of MINERALS obtained during the Years 1899 and 1900.

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes	216	2,348	517	6,901
Bismuth, cobalt, and nickel ores ...	1,162	526,715	595	592,769
Brown coal	1,292,348	3,174,848	1,540,512	4,308,140
Coal	4,546,756	49,740,956	4,802,700	60,304,069
Fluor spar	1,355	10,162	1,462	10,965
Iron ore	8,038	51,522	5,840	48,376
Limestone, &c.	—	37,189	—	34,153
Manganese ore	50	500	—	—
Ochre and umber	71	2,284	276	4,486
Pyrites (arsenical, iron, and copper)...	7,443	92,755	8,592	108,106
Quartz, mica, and uranium ore ...	118	6,637	53	4,654
Silver ore	13,585	1,797,098	12,592	2,027,990
Tin ore	72	54,999	79	68,309
Wolfram	50	51,771	42	43,979
Zinc ore	306	6,100	59	705
Specimens	—	2,918	—	1,372
Total value in marks ...	—	55,558,802	—	67,564,974
" " " £ sterling ...	—	£2,777,940	—	£3,378,249

* *Jahrbuch für das Berg- und Hüttenwesen im Königreiche Sachsen, Jahrgang 1901, Freiberg, pp. 67, 69, and 178.*

GERMAN EMPIRE.—SAXONY—*continued.*

TABLE 442.

DEATHS and DEATH-RATES from ACCIDENTS at MINES during the Years 1899 and 1900.

Kind of Mines.	Deaths from Accidents.		Death-rate* per 1,000 Persons Employed.	
	1899.	1900.	1899.	1900.
Brown coal	10	8	3.93	2.73
Coal	27	34	1.18	1.41
Ore	4	4	.96	1.05
Total and average	41	46	1.38	1.49

In the mines worked by the State in Saxony so-called "Safety men" (*Sicherheitsmänner*) are chosen from among the workmen and charged with the duty of inspecting the workings underground and works above ground with reference to the safety of the persons employed. They have to make written reports of all inspections. Instead of being paid by their fellow workmen, as is the case in the mines in the United Kingdom which are under the Coal Mines Regulation Acts, the Saxon "Safety men" are remunerated by the State.†

German West Africa.

It is stated that the ores of copper, gold, lead and silver have been found in abundance at a spot about 400 miles inland from Walfisch Bay.‡

Greece.

The principal mineral productions of Greece are the ores of iron, lead, manganese, and zinc, and they are chiefly obtained from the Laurium district in Southern Attica.

Salt is obtained from sea water at Anavyssos, near Laurium, and in the Island of Leucados. The salt industry is a Government monopoly.

Nearly every island of the Greek Archipelago § contains valuable mineral deposits, and more particularly the ores of iron and manganese.

Milo yields gypsum, kaolin, manganese ore, millstones, salt, and sulphur. Seriphos exports iron ore in increasing quantities, and so does its neighbour Thermia. Naxos has long been famous for its excellent emery, and modern appliances are being introduced to quarry it. Zea has deposits of the ores of iron, lead, and manganese. Kimolos abounds in minerals; lead was worked by the ancients in Polinos; Polycandros will soon be producing iron ore. Santorin yields lava from which paving stones are manufactured and puzzolana.

* In calculating the death-rate the persons employed in commercial work above ground numbering about 330 yearly are excluded.

† "Die Einführung von Sicherheitsmännern aus dem Kreise der Arbeiter bei dem fiskalischen sächsischen Bergbau." *Jahrbuch für das Berg- und Hüttenwesen im Königreich Sachsen auf das Jahr, 1900.* Freiberg in Sachsen, 1900. Supplement C., p. 1.

‡ *Min. Jour.* Vol. LXX., 1900, p. 637.

§ Consul Cottrell, "Trade of the Cyclades for the Year 1899." *Dipl. and Cons. Reports*, No. 2,411, Ann. Ser., 1900 [Cd. 1-48], pp. 6-12.

GREECE—continued.

The marble industry of Greece,* with the influx of British capital, is gradually assuming more importance. An English company works white statuary marble at Pentelicon and Paros, coloured marble at Skyros and "rosso antico" at Mani in Laconia; green "cipollino" is being quarried in Eubœa, and the "verde antico" is again brought into the market. Naxos produces marble for building purposes.

TABLE 443.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.†

	Year.			Total Under and Above Ground.
	1898	...	...
	1898	...	...	9,090
	1899	...	...	9,346

TABLE 444.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.†

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chromite	1,367	54,680	4,386	175,440
Emery	7,742	824,523	8,200	869,200
Gypsum	96	8,640	110	9,900
Iron ore	485,159	4,336,431	628,512	6,285,120
Lead (argentiferous pig lead) ...	11,598	5,451,060	11,555	5,488,625
" ore... ..	1,139	42,143	1,300	52,000
Lignite	17,310	173,100	11,363	204,534
Magnesite	15,279	305,580	20,786	415,720
Manganese ore	14,097	422,910	17,000	510,000
Millstones Pieces	15,000	37,500	15,300	37,500
Salt from sea water	20,000	2,002,000	20,000	2,000,000
Sulphur	135	12,150	1,237	111,330
Zinc ore	32,520	2,764,200	22,595	1,920,575
Total value in francs	{ — }		—	18,079,944
" " £ sterling	{ — }		—	£723,198

TABLE 445.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.†

	Year.			Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	1898	...	...
	1898	...	...	7	·77
	1899	...	...	3	·32

* Consul Walsh, "Trade and Agriculture of the Piræus for the Year 1900." *Dipl. and Cons. Reports*, No. 2,614 Ann. Ser. 1901 [Cd. 429-72], pp. 4 and 5.

† Official Return furnished by the Bureau of Mines, Athens. Figures for 1900 not yet available.

Greenland. (See DENMARK.)

Guatemala.*

The following minerals are found in different parts of the Republic, viz., the ores of antimony, copper, gold, iron, lead, manganese, silver and zinc, besides coal, lignite, graphite, gypsum, marble, mica, salt, sulphur, talc, and turquoises.

Though mines were a source of great revenue to Church and State between 1627 and 1820, when Guatemala was a colony of Spain, the mineral industries at the present day are unimportant.

With the object of encouraging mining a new law has lately been passed ; it exempts the mine owner from import duties upon machinery and materials and from export duties upon the mineral products, and it also sets the miner free from military service.

Hayti.†

Coal, copper, quicksilver, and other minerals are said to exist, but at present the deposits have not been developed.

Herzegovina. (See AUSTRIA-HUNGARY.)

Holland.‡

Holland possesses immense peat bogs,§ which produce about 100 million hectolitres of good fuel annually. Since 1893 the turbaries have been further utilized for making peat litter. There are now nine factories producing it ; they employ 2,500 persons, and their total output is more than 220,000 tons of peat litter a year.

There are coal mines at Heerlen and Kerkrade|| ; and underground stone quarries are worked at Maastricht and Valkenberg.

TABLE 446.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.

Year.	Under-ground			Above-ground.			Total Under-ground and Above-ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1899 ...	610	—	610	280	2	282	892
1900 ...	902	—	902	403	1	404	1,306

* Consul Trayner. "Trade, Agriculture and Finance of Guatemala for the Year 1899." *Dipl. and Cons. Reports*, No. 2,488, Ann. Ser., 1900 [Cd. 1-125] pp. 27-32.

† Acting Consul-General Siordet, "Trade of the Republic of Hayti for the Year 1893." *Dipl. and Cons. Reports*, No. 2,358, Ann. Ser. 1899 [C. 9496-29], p. 6.

‡ Official Returns furnished by the Government of the Netherlands.

§ Rommenholler. *Mouvement du Commerce et de l'industrie des Pays-Bas durant l'exercice 1898*. Rotterdam, 1899, p. 122.

|| Büttgenbach, "Die Geologie des alten Herzogthums Limburg." *B.u.h. Zeitung*, Vol. LVII, 1893, p. 363.

HOLLAND—*continued.*

TABLE 447.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years
1899 and 1900.

Year.	Under-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1899 ...	40	—	40	70	—	70	110
1900 ...	40	—	40	40	—	40	80

TABLE 448.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
		Florins.		Florins.
Building stone ... <i>Cubic Metres</i>	2,000	4,000	3,000	6,000
Coal ... <i>Metric Tons</i>	212,973	1,040,514	320,225	1,988,010
Total value in Florins ...	—	1,044,514	—	1,994,010
„ „ £ sterling ...	—	£87,043	—	£166,167

TABLE 449.

DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.

Year.	Under-ground.			Above-ground.			Total Number of Deaths Under and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Under and Above Ground.
1899	2	—	2	—	—	—	2	3.28	2.24
1900	2	—	2	—	—	—	2	2.22	1.53

There were no fatal accidents at the underground stone quarries in 1899 and 1900.

Honduras.*

The precious metals, gold and silver, are worked on a small scale. The exports of minerals during the year ending 30th June, 1899, were as follows :—

TABLE 450.

	Mineral.	Value.
		£
Gold		2,359
Ore		3,852
Salt		212
Silver		61,272

Indo-China.

ANNAM.

Annam and Tong-King possess large deposits of coal, iron ore, and argentiferous lead ore; besides having also asbestos, graphite, kaolin, and marble, and the ores of antimony, copper, gold, manganese, nickel, quicksilver, and tin.†

The “Société des houillères de Tourane” obtained 2,300 tons of coal in 1898 from its collieries, which are situated at Nong-son.‡ There is no published information about the output for 1899.

Iron ore§ is being smelted on a very small scale by the natives at Nho-Lam in the province of Quang-nam.

COCHIN CHINA.||

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895; but the mines do not appear to have been worked since, as no quantity is reported in the French statistics.

TONG-KING.¶ (See also ANNAM.)

The “Société Française des Charbonnages du Tonkin” has large open workings for coal in Haton, and a mine 140 m. deep in Nagotna. The output from these two places in 1900 was 144,773 and 49,668 tons respectively, and the total value about £155,552.

* Consul Campbell, “Trade of Honduras for the year 1899.” *Dipl. and Cons. Reports*, No. 2463, Ann. Ser., 1900 [Cd. 1-100], p. 8.

† *B.u.h. Zeitung*. Vol. LVIII., 1899, p. 292

‡ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1899*, p. 86.

§ Consul Tremleff, “Trade of Saigon and District for the Year 1897.” *Dipl. and Cons. Reports*, No. 2060, Ann. Ser., 1898 [C. 8648-82].

|| *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1896*, p. 76.

¶ *Ibid.* pour l'année, 1900.

INDO-CHINA.—TONG-KING—*continued*.

In 1899 the Company produced 276,175* tons.

Copper of good quality is produced from the mines in the provinces of Sontay, Langson, and Laokay.

Iron mines are numerous and productive in the provinces of Hanoy and Sontay.

Italy.

An excellent summary† of the mineral industries of Italy is appended to the catalogue of the exhibits made by the Government at the Paris Exhibition of 1900. In a few words, the nature of the principal kinds of mines and quarries may be stated as follows :—

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc and lead ore ; these are far more largely worked in Sardinia than in the peninsula itself. Again, in the case of iron ore, it is an island, Elba, which is the mainstay of the industry. England absorbs about two-fifths of the Elban output, and the remainder goes to Germany, the United States, and France.‡ The marble quarries of the Apuan Alps have long been a source of wealth to the country.

The following are a few particulars concerning some of the minerals :—

Alunite.—Quarrying natural alum-stone is a very old industry in the Tolfa hills north-east of Civita Vecchia. The open workings have now given place to underground mining, but the total output at the present day amounts to only a few thousand tons annually.

Asphalt.—A large quantity of bituminous limestone is quarried at Ragusa Superiore in the province of Syracuse. The principal seam is from 13 feet to 20 feet (4 to 6 m.) in thickness, and contains from 16 to 50 per cent. of bitumen. A similar bituminous rock is worked in the Abruzzi.

Boric Acid.—The amount of boric acid produced from the natural steam-puffs (*soffioni*) in the provinces of Pisa and Grosseto varies from two to three thousand tons yearly.

Brown Coal.—Italy greatly lacks supplies of fossil fuel. Lignite is worked in Tuscany and in Umbria.

Copper.—The principal mines are those of Montecatini in the province of Pisa, Libiola and its neighbours in Eastern Liguria, Fenice, Capanne Vecchie, and Bocheggiano, in the province of Grosseto, and Agordo in Venetia.

Gold.—The gold veins in the flanks of Monte Rosa were worked by the Romans, and still continue to supply the precious metal.

Granite.—Piedmont boasts of excellent red granite and white granite, and the quarries at Baveno and Mont'Orfano on the Lago Maggiore are worked upon an extensive scale.

Iron.—The thick deposits of iron ore in the Island of Elba have been worked for many centuries, and are not yet exhausted. The ore is obtained in open quarries, is loaded at once into barges, and then transhipped into large steamers, which convey it to England, France, Germany, and even America. But a total output of only 250,000 tons is small compared with that of other iron-producing countries.

* *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1900.*

† *Catalogo della Mostra fatta dal Corpo Reale delle Miniere all'Esposizione Universale del 1900 a Parigi.* Romé, 1900

‡ Consul Tonietti, "Trade of the Island of Elba for the Year 1899." *Dipl. and Cons. Reports*, No. 2,458, Ann. Ser., 1900 [Cd. 1-95], p. 5.

ITALY—continued

Lead and Zinc.—Sardinia is remarkable for its deposits of the ores of lead and zinc. Malfidano, in the province of Cagliari, is the most important zinc mine in the island. It employs 2,000 workmen, and produces annually on an average 51,500 tons of zinc ore, worth nearly £150,000.

Marble.—The well-known Carrara marble is obtained from beds of crystalline limestone of Triassic age, which in places attain the enormous thickness of more than 3,000 feet (1,000 m.). In addition to the finest white statuary marble, the quarries furnish many coloured varieties, each known in commerce by its special name.

The importance of the industry may be gauged by the fact that the quarries and dressing establishments of the Apuan Alps gave work to 10,155 persons in 1898, or about the same number as are employed in all the open slate quarries of North Wales.

Quicksilver.—Cinnabar is obtained at Monte Amiata in Tuscany.

Salt.—The deposits of rock salt worked in Sicily belong to the Upper Miocene period, and lie geologically above the sulphur-bearing rocks. The Sicilian mines produce from 12,000 to 15,000 tons a year, but this output might be very largely increased. Salt is obtained from sea water by solar evaporation and especially in Sicily. The works at Trapani produced about 150,000 tons in 1900.*

Sulphur.—The sulphur of Sicily is found in seams and lenticular masses in rocks of Upper Miocene age, and mainly in the provinces of Caltanissetta and Girgenti. At the end of 1900 there were 883 mines at work, employing 35,290 workmen and the output of sulphur-bearing rock was 3,628,643 tons.

The proportion of the total output of sulphur extracted by the old-fashioned kilns (*calcaroni*) goes on diminishing from year to year. In 1891 about three-quarters of the total output was obtained in this manner; in 1900, owing to the increased use of the newer kilns with communicating chambers, the proportion fell to two-fifths.

Volcanic Lava and Ash.—Basaltic lava is quarried on a large scale at the foot of Vesuvius, and so is volcanic ash known as "pozzolana." Similar products are obtained near Rome.

TABLE 451.

NUMBER OF MINERAL WORKINGS, VALUE OF OUTPUT, and NUMBER OF PERSONS EMPLOYED in the Years 1899 and 1900.†

Kind of Workings.	1899.			1900.		
	Number at Work.	Total Value of Output.	Number of Persons Employed.	Number at Work.	Total Value of Output.	Number of Persons Employed.
Mines, &c. ...	1,548	Lire. 91,392,468	64,300	1,541	Lire. 85,060,002	67,748
Quarries ...	5,536	35,300,341	33,205	5,173	32,831,435	31,535
Turbaries ...	43	422,985	1,032	50	366,991	797
Sea salt ...	66	2,570,368	3,071	65	2,369,117	2,648
Total ...	—	Lire 129,686,162 £ sterling 5,187,446‡	101,608	—	Lire 120,627,545 £ sterling 4,825,102‡	102,728

* Consul Churchill "The Trade of Sicily for the year 1900." *Dipl. and Cons. Reports*, No. 2,716, Ann. Ser., 1901 [Cd.786-20], p. 37.

† *Rivista del Servizio Minerario nel 1899*, pp. xxv., xxxiii., l. and lxxix., *nel 1900*, pp. xxi., xxv., xxvi., xxxii., xxxvii., l.

‡ Value calculated at 25 Lire = 1l. sterling.

ITALY—continued.

TABLE 452.

NUMBER OF PERSONS EMPLOYED in and about MINES and other MINERAL WORKINGS (exclusive of Quarries, Turbaries, and Sea Salt Workings) during the Years 1899 and 1900,* classified according to mineral wrought.

Kind of Mines or other Mineral Workings.	1899.		1900.	
	Number of Mines or Workings.	Number of Persons Employed.	Number of Mines or Workings.	Number of Persons Employed.
Alum-stone	1	95	1	95
Antimony ore	19	381	21	492
Arsenic ore	1	2	2	4
Asphalt, &c.	14	1,281	9	1,696
Boric acid	12	278	12	380
Copper ore	23	1,752	28	2,226
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	55	3,266	93	3,822
Gas, carburetted hydrogen	(a)	(a)	(a)	(a)
Gold ore	44	867	32	857
Graphite	22	207	24	261
Iron ore	41	1,867	46	2,219
Iron pyrites	55	891	32	812
Lead ore	(b)	(b)	(b)	(b)
Manganese ore	9	148	10	166
Manganese and iron ore	1	240	1	270
Mineral waters	(a)	(a)	(a)	(a)
Nickel and cobalt ore	7	28	(b)	(b)
Petroleum	18	482	16	421
Quicksilver	12	598	12	825
Rock salt	22	350	23	343
Salt from springs	(a)	(a)	(a)	(a)
Silver ore	9	606	7	523
Sulphur	919	35,105	883	35,290
Zinc ore	264	15,856	289	17,046
Total	1,548	64,300	1,541	67,748

* *Rivista del Servizio Minerario* nel 1899, pp. xxv., xxxiii., l. and lxxix., nel 1900, pp. xxi., xxv., xxvi., xxxii., xxxvii., l.

(a) Included with petroleum.

(b) Included with zinc ore.

ITALY—continued.

TABLE 453.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum-stone	5,800	29,000	5,200	36,400
Antimony ore	3,791	224,311	7,607	362,342
Arsenical pyrites	—	—	6	480
Asphalt, &c.	81,987	1,152,946	100,775	1,339,873
Boric acid	2,674	855,680	2,491	847,144
Copper ore	94,764	3,438,861	95,824	3,169,842
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	388,534	2,759,219	480,859	3,663,915
Gas, carburetted hydrogen (cubic metres).	753,185	29,165	1,400,338	49,399
Gold ore... ..	11,859	457,080	5,840	266,284
Graphite	9,990	279,720	9,720	278,600
Iron ore	236,549	3,534,117	247,278	4,585,522
„ „ manganiferous	29,874	385,744	26,800	335,000
Iron pyrites (cupreous)	76,538	994,293	71,616	1,480,276
Lead ore	(a) 34,294	5,675,660	(b) 39,108	7,351,962
Manganese ore	4,356	112,160	6,014	154,974
Mineral waters	27,114	359,644	27,707	367,202
Nickel and cobalt ore	3	900	—	—
Peat	30,228	422,985	25,125	366,991
Petroleum	2,242	594,062	1,683	491,769
Quicksilver	29,322	957,722	33,930	1,127,380
Rock salt	17,821	302,338	18,331	276,387
Salt from springs	11,021	319,751	10,890	366,519
Salt, sea	363,826	2,570,368	338,034	2,369,117
Silver ore	540	582,262	584	398,870
Sulphur, rock	3,763,206	44,114,503	3,628,643	41,701,381
Zinc ore	150,629	24,233,330	139,679	16,408,481
Produce from quarries (value) ...	—	35,300,341	—	32,831,435
Total value in lire	—	129,686,162	—	120,627,545
„ „ £ sterling	—	£5,187,446	—	£4,825,102

TABLE 454.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1899 and 1900.†

Cause.	1899.					1900.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 litres' worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 litres' worth of Mineral produced.
Falls of ground ...	122	69	82	1·07	·75	110	60	79	·89	·70
Suffocation by gases, explosions, and fires.	14	16	44	·25	·18	20	22	22	·32	·26
Falling down shafts, &c., and miscellaneous.	55	19	42	·29	·21	77	33	57	·49	·39
Blasting	9	3	7	·05	·03	12	4	8	·06	·05
Total	200	107	175	1·66	1·17	219	119	166	1·76	1·40

* *Rivista del Servizio Minerario nel 1899*, pp. xxv., xxxiii., and l., and *nel 1900*, pp. xxv., xxxvi. and l.

† Ditto, *nel 1899*, pp. cvii. and cviii., and *nel 1900*, pp. lxii.

(a) Including 3,248 tons of lead and zinc ore, of the value of 64,851 lire.

(b) Including 4,005 tons of lead and zinc ore, of the value of 112,997 lire.

TABLE 455.

ACCIDENTS IN THE SULPHUR MINES OF SICILY, arranged according to cause, during the 10 years 1890-1899.*

Province.	Falls of Ground.			Falling into Shafts, from the Roadways or Working Places.			Explosions of Gas.			Poisoning by Sulphuretted Hydrogen.			Suffocation by Carbonic Anhydride.			Suffocation by Sulphurous Anhydride in consequence of Fires.			Fall of Workman's own Load or Fall of Load of Fellow Workman.			By Cages or Tram Waggon's.			Inundations.			Blasting.			Miscellaneous.			Total.			Average for the 10 years.					
	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number.		Injured.	Number of Deaths per 1000 employed.	Number of Cases per 1000 employed.	Number of Workmen Annually.	Number of Cases per 1000 employed.	Number of Deaths per 1000 employed.	Number Injured per 1000 employed.
	Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.							
Caltanissetta	370	180	319	31	6	29	25	8	57	16	17	11	7	7	—	8	13	51	11	2	10	8	1	8	—	1	1	—	15	5	13	16	6	10	508	246	503	9,367	542	263	542	
Catania ...	82	53	53	3	1	2	9	9	29	1	1	2	1	5	8	1	3	—	—	—	—	3	2	4	2	2	2	—	—	—	—	1	3	1	1	108	77	102	2,337	462	329	436
Girgenti ...	153	156	91	29	7	23	14	8	36	7	8	2	2	3	—	3	7	10	18	1	19	6	3	3	—	—	—	—	12	4	8	7	2	5	251	199	197	6,639	378	299	296	
Palermo ...	27	20	23	1	—	1	—	—	—	—	—	—	—	—	—	2	4	—	2	—	2	1	—	1	—	—	—	—	—	—	—	11	1	10	44	21	41	752	585	279	545	
Total ...	632	409	486	64	14	55	48	25	122	24	26	15	10	15	8	14	23	65	31	3	31	18	6	16	3	2	3	2	29	9	22	37	10	26	911	543	848	19,095	472	284	444	

* *Rivista del Servizio Minerario, nel 1900, p. lxxii.*

During the year 1900 the Minister of Agriculture, Industry and Commerce, ordered a special inspection of all the sulphur mines in Sicily. The Official Report contains a table showing the number and nature of the accidents which have taken place at the Sicilian sulphur mines during the last 10 years. Out of a total of 543 deaths, no less than 409 or 75.3 per cent. were caused by falls of ground; this proportion is decidedly high. The Sicilian miner is further menaced by the special dangers of poisoning by sulphuretted hydrogen and suffocation by sulphurous acid given off in underground fires.

ITALY—continued.

TABLE 456.

ACCIDENTS at QUARRIES, arranged according to CAUSES, during the Years 1899 and 1900.*

Cause of Accident.	1899.				1900.			
	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed
Falls of ground	34	25	27	·75	22	15	20	·48
Falling down workings, and miscellaneous.	31	9	23	·27	24	7	19	·22
Blasting	4	—	4	—	6	1	5	·03
Total	69	34	54	1·02	52	23	44	·73

Italian Possessions. (See ERITREA.)

Ivory Coast.

Gold is extracted on a small scale by the natives. The quantity exported in 1896 was valued at 918,356 francs (100 fr.=1 oz.), or £36,734, and therefore contained about 9,183 ozs. The export in 1897 may be reckoned at 4,950 ozs. of fine gold, valued at £19,800. Fossil gum opal is fairly abundant near Thiassalé and other places. The value of the quantity exported is about £3,000 annually.

Japan.

In addition to its well-known deposits of coal and copper ore, Japan is said to possess great wealth in the ores of antimony, gold, lead, manganese, silver, and zinc, besides petroleum and sulphur.

The most important coal mines are upon the Island of Kiushiu; the total output is increasing rapidly, and exceeds that of any British colony. More than 3½ million tons of coal were exported in 1900.†

Alluvial deposits of gold are being worked energetically on the island of Hokkaido.‡ Gold also occurs in Formosa, and the mines are situated in the neighbourhood of Kelung. Their output in 1899 was 4,116 ozs.§

Petroleum || is obtained from wells in the Echigo district, on the West Coast of Japan. The output for 1899 is estimated at 9 million gallons. Oil-fields likewise exist on the Island of Hokkaido.‡

Sulphur is now being worked on a large scale on the volcanic island of Etrofu in the extreme north of Japan; 10,000 tons were obtained in 1900.¶

* *Rivista del Servizio Minerario nel 1899*, p. cxi., and *nel 1900*, p. lxxv.

† A. H. Lay, "Trade of Japan for the year 1900." *Dipl. and Cons. Reports*, No. 2,595, Ann. Ser., 1901.

‡ Consul Playfair, "Trade of Hokodate for the year 1900." *Dipl. and Cons. Reports*, No. 2,682, Ann. Ser., 1901 [Cd. 429-140].

§ Acting-Consul Wawn, "Trade of North Formosa for the year 1900" *Dipl. and Cons. Reports*, No. 2,728, Ann. Ser., 1901 [Cd. 786-32], p. 12.

|| Consul Hall, "Trade of Hiogo and Osaka for the year 1899." *Dipl. and Cons. Reports*, No. 2,564, Ann. Ser., 1901 [Cd. 429-22], p. 7.

¶ Crawford, "Sulphur Mining in the North Pacific." *Cassier's Mag.*, Vol. xix., 1901, p. 311.

JAPAN—continued.

TABLE 457.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1898 and 1899.*

Kind of Workings.	Persons Employed in the Year.	
	1898.	1899.
Coal Mines	75,831	60,964
Metal Mines	51,706	2,621
Other Mineral Workings ...	5,194	56,082
Total	132,731	119,667

TABLE 458.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1899. and 1900.*

Mineral or Metal.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
Antimony, crude } (metal)...	Metric Tons. 712	£ 13,572	Metric Tons. 81	£
„ refined }	229	7,430	349	
Arsenic (metal)	5	64	5	
Coal	6,716,881	2,261,174	7,429,457	
Copper (metal)	24,271	1,338,862	25,304	
Gold „	Kilos. 1,673	193,927	Kilos. 2,130	
Graphite	53	1,024	94	
Iron, pig	23,066	93,291	21,299	
„ pyrites	8,376	1,092	16,146	
„ vitriol	864	1,684	932	Not stated.
Lead (metal)	1,988	25,518	1,877	
Manganese	7,953	5,575	15,228	
Petroleum, refined	4,753	17,742	Gal. 2,077,228	
„ crude	52,874	86,742	„ 22,175,825	
Salt	—	—	659,118	
Silver (metal)	Kilos. 56,168	209,936	Kilos. 58,953	
Sulphur	10,235	42,347	14,435	
Tin (metal)	19	1,746	12	
Total value	—	4,301,726	—	—

* *Statistical Abstract of the Mineral Industry*, published by the Mining Bureau of the Department of Agriculture and Commerce, Tokio, 1899, and Official Return furnished by the Mining Bureau at Tokio.

JAPAN—continued.

TABLE 459.

ACCIDENTS at MINES during the Years 1898 and 1899.*

	Year.	Killed.	Death-rate per 1,000 Persons Employed.
	1898	67	0.53
	1899	674	5.63

The high death-rate in 1899 is exceptional. Several hundred people lost their lives through the flooding of a copper mine at Besshi Ihikoku.

Java. (See DUTCH EAST INDIES.)

Johore.†

Gold has been found in one or two places, and the country is rich in iron ore. Important deposits of tin have been discovered in several places, and a considerable amount of tin mining is now carried on in the Ulu Johore districts, and some at Bukit Mor, Padang.

Lourenço Marques. (See PORTUGUESE EAST AFRICA.)

Luxemburg.

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

Madagascar.‡

The mineral wealth of the island appears to be great. In addition to gold, which is found in alluvial deposits widely spread over the island, the ores of antimony, copper, iron and tin are said to be abundant, to say nothing of asphalt, coal, and petroleum.

According to Consul Porter, rich deposits of alluvial gold have been discovered in the valley of the Ampoasary, a tributary of the Mananjary river, about 40 miles east of the town of Ambositra. The auriferous gravel is being washed in pans by the natives, of whom about 3,000 are at work. The district is unhealthy owing to the prevalence of fever.

The quantity of gold exported from Madagascar in 1900 was 43,400 ozs. (1,350 kil.), valued at £143,520.§

* *Statistical Abstract of the Mineral Industry*, published by the Mining Bureau of the Department of Agriculture and Commerce, Tokio, 1899, and Official Return furnished by the Mining Bureau at Tokio.

† *The Singapore and Straits Directory for 1900*. Singapore, 1900, p. 301.

‡ MS. communication to Foreign Office, 5 July, 1900, and Consul Porter, "Trade of Madagascar for the Year 1899," *Dipl. and Cons. Reports*, No. 2513, Ann. Ser., 1900 [Cd. 352-9], p. 5.

§ Return furnished by the French Government.

Mexico.*

Many minerals are obtained in Mexico. The most important are the ores of copper, gold, lead, and silver.

Coal.—Various coalfields have been discovered, and no doubt will gradually become of great value to the Republic. At present the output is small.

Copper.—The most important copper mine in Mexico is at Boleo,† Lower California. It employed 3,700 persons in 1900, and produced 11,297 tons of metal.

Gold.—The precious metal is found in many of the provinces, but especially in Sonora, Sinaloa, Guerrero and Oaxaca

Iron.—Rich deposits exist, but at present the ore is smelted on a small scale and only by charcoal furnaces.

Marble.—The so-called "Mexican onyx" is a handsome marble, obtainable in large blocks, and much prized for decorative purposes.

Silver.—Mexico produces nearly 30 per cent. of the world's output of silver. The principal mining districts are in the States of Guanajuato, Zacatecas, San Luis Potosi, and Hidalgo.

TABLE 460.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.‡

Year.	Men.	Women.	Boys.	Total.
1898	84,121	812	4,139	89,072
1899	99,396	1,288	5,852	106,536

TABLE 461.

VALUE of MINERALS exported during the Years 1899 and 1900.

Mineral.	1899.§		1900.‡	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	\$	Metric Tons.	\$
Antimony ore	10,382	115,292	2,313	23,319
Asphalt	56	1,623	627	12,846
Coal	113,191	453,303	38,676	157,282
Copper and Copper ore	25,506	7,966,655	28,378	9,495,235
Gold	Kilos. 11,724	7,919,330	Kilos. 12,201	8,240,590
Graphite	2,305	22,847	2,561	25,650
Gypsum	1,050	5,250	1,600	8,000
Lead	67,442	3,885,922	75,413	4,290,033
Marble	369	33,820	1,030	108,759
Precious stones	—	801	—	875
Pumice stone	22	1,510	—	—
Salt	1,820	9,770	1,518	4,151
Silver	Kilos. 1,567,500	57,614,631	Kilos. 1,923,331	78,693,079
Tin	Kilos. 4	4	Kilos. 96	43
Zinc ore	—	—	1,091	15,769
Minerals not specified	—	18,717	701	5,347
Total value in \$	—	78,049,475	—	101,080,978
„ „ £	—	£8,596,880||	—	£10,932,157||

* Romero, *Geographical and Statistical Notes on Mexico*. New York and London, 1898, pp. 13-27, and Sallerier, *Data referring to Mexican Mining*. Mexico, 1901.

† *Exposition Universelle de 1900. Compagnie du Boleo. Notice sur la période de 1889 à 1900*. Paris, 1900.

‡ Official Return furnished by the Ministry of Finance, Mexico.

§ *Boletín de Estadística Fiscal*. Numeros 193 and 201, Mexico, 1900.

|| Calculated at 10 dollars = £1, except for the value of the Gold which is calculated at 5 dollars to £1.

MEXICO—*continued.*

TABLE 462.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.*

Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
1898	168	1·89
1899	109	1·02

Morocco.†

Copper.—In the beginning of the sixties copper ore was still being worked near Tarudant, the capital of the province of Sus. The ore is likewise found in the Tangier region.

Gold.—Silver and gold are said to occur in the province of Sus.

Iron.—It is probable that the Carthaginians worked the old iron mines, of which remains exist at Djebel Hadid, 14 miles N.E. of Mogador.

Salt.—Morocco is rich in salt. Some is found in the beds of dried-up lakes in summer. Rock salt is obtained in the Atlas Mountains, near Demnat; and at Rabat and elsewhere sea water is evaporated by the heat of the sun.

**Netherlands and its Colonies. (See HOLLAND, DUTCH EAST INDIES, AND
DUTCH WEST INDIES.)**

New Caledonia.‡

Chromic Iron.—New Caledonia produces more chromic iron than any other country except Turkey. The ore exported is good, and gives 50 to 52 per cent. of chromium oxide.

Cobalt Ore.—With an output of 2,440 tons of ore, containing 3 to 4 per cent. of metal, New Caledonia ranks very high as a producer of cobalt; indeed it probably takes the highest place.

Nickel Ore.—The French colony, while suffering from the competition with Canada, the greatest nickel country of the world, remains nevertheless a large producer. The ore exported yields from 6 to 8 per cent. of metal.

TABLE 463.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.§

Year.	White.	Coloured.	Total.
1898	3,831	1,259	5,090
1899			

* Official Return furnished by the Ministry of Finance, Mexico.

† Fischer, "Die Bodenschätze Maroccos" *Zeitschr. f. prakt. Geologie.* Vol. VIII., 1900, Part 4, p. 110.

‡ Pelatan, "Les richesses minérales des Colonies Françaises," *Revue Universelle.* Vol. L., 1900, p. 117.

§ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année, 1898*, p. 85. Figures for 1899 are not yet available.

NEW CALEDONIA—continued.

TABLE 464.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity Exported.	Value.	Quantity Produced.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chrome ore	12,634	649,575	10,500	630,000
Cobalt ore	3,294	337,920	2,440	276,000
Copper ore	6,349	492,310	2	200
Nickel ore	103,908	5,543,865	100,000	5,800,000
Total value in francs	{ 7,023,670		{ 6,706,200	
" " " £ sterling	{ £280,947		{ £268,248	

Nicaragua.†

The exact output of the mines and alluvial diggings does not appear to be known. The exports are given in the table below.

TABLE 465.

Mineral.	1900.
Gold (bars and dust) ...	{ Kilos. 575 } Ozs. 18,500 } £ 62,000
Gold ore	Lbs. 14,050 } 80,690

Norway.‡

Norway is far less important as a mining country than Sweden.

Apatite.—This mineral was worked on a large scale some years ago at Oedegaarden but the output is now comparatively small.

Copper.—Copper ore and iron pyrites are the chief metallic products of Norway. They are produced by various mines, among those of which may be mentioned Røros, Sulitelma and Lyngen.

Felspar.—The supply of felspar is derived mainly from veins of pegmatite in Setersdalen in the province of Smaalenene and along the coast between Bamle and Arendal. Quartz and mica are obtained from the same deposits.

Gems.—Emeralds are being obtained near Minne.

Granite.—Quarries producing granite, syenite, gabbro or porphyry, are worked near Fredrikshald, Frederikstad, Larvik and Drammen.

* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1899, and pour l'année 1900.*

† Consul Chambers, "Trade of Nicaragua for the Year 1900." *Dipl. and Cons. Reports*, No. 2,585, Ann. Ser., 1900 [Cd. 429-43].

‡ Information furnished by the Central Statistical Office, Kristiania, and *La Norvège. Ouvrage Officiel publié à l'occasion de l'Exposition Universelle de Paris, 1900.* Kristiania, 1900, p. 295.

NORWAY—continued.

Infusorial Earth.—Beds of infusorial earth are worked at different places in the South of Norway.

Marble.—Fauske, in Nordland, is the chief marble centre. The quarries are worked on a large scale.

Silver.—The Kongsberg mines have long been famous for their native silver, which is sometimes met with in masses of considerable size; the picked stuff sent to the smelting works contains 70 per cent. of the precious metal. The amount of silver obtained by smelting, and derived almost entirely from Kongsberg, was 4,598 kilos, valued at 333,000 kroner in 1899.

There appears to be no official information about accidents in mines in Norway, similar to that which is given by the sister country.

TABLE 466.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.*

Kind of Mines.					1898.	1899.
Apatite...	...	...	...	...	?	?
Chrome ore	...	...	...	...	—	2
Cobalt ore (dressed)	...	...	...	...	20	—
Copper ore	...	...	...	...	1,417	1,398
Felspar	...	...	...	...	?	?
Gold	...	...	...	...	113	82
Iron ore	...	...	...	...	116	148
Iron pyrites (in part cupreous)	...	...	...	...	423	501
Nickel ore	...	...	...	...	—	3
Silver and silver ore	...	...	...	...	220	259
Titanium ore (rutile)	...	...	...	...	6	—
Zinc ore	...	...	...	...	44	64
Total	...	...	...	...	2,359	2,457

TABLE 467.

QUANTITY and VALUE of MINERALS produced from MINES during the Years 1898 and 1899.*

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Kr.	Metric Tons.	Kr.
Apatite (exported)	3,593	197,600	1,500	82,500
Chrome ore	—	—	41	800
Cobalt ore (dressed)	21	8,000	—	—
Copper ore	37,047	1,575,800	43,358	2,182,400
Felspar (exported)	11,355	181,700	19,260	288,400
Gold (fine)	Kilos. 2,838	5,700	Kilos. 4,380	10,000
Iron ore	4,425	29,600	4,576	30,000
Iron pyrites (in part cupreous)	89,763	1,431,800	95,636	1,708,500
Silver (fine)	Kilos. 4,802	345,000	Kilos. 4,598	330,000
Titanium ore (rutile)	35	22,000	30	17,000
Zinc ore	320	9,600	379	11,500
Total value in Kr....	—	3,806,800	—	4,661,100
„ „ £ sterling...	—	£209,165	—	£256,104

* Official Return furnished by the Central Statistical Office, Kristiania.

Paraguay.

Though many useful ores and minerals are said to exist in Paraguay, they still remain unworked.

Persia.*

The minerals of the country belong to the Government, and the mines are leased out to private persons. The Ministry of Mines has no account of the number of persons employed, nor of quantity and value of the minerals produced.

The mineral wealth of Persia is great, though it cannot be properly utilized at the present time owing to want of easy means of communication. Deposits of the following useful minerals are known to exist, viz.:—alum, antimony ore, borax, coal, the ores of cobalt, copper, gold, iron, lead and manganese, petroleum, realgar, salt, saltpetre, silver-lead ore, sulphur, and turquoises.

Coal.—There are fine coal deposits† near Kerman, and much iron ore of good quality on the slopes of the Elburz range and elsewhere.

Copper.—Rich deposits of copper are known.

Lead ore.—Argentiferous lead-ore is plentiful, but is worked in a primitive fashion.

Turquoises.—The annual rent paid for the turquoise mines‡ near Nishapur in Khorassan is £4,800, and the value of the gems produced must therefore considerably exceed that sum.

Peru.§

No exact data exist concerning the number of persons employed in mines; but it is estimated at 100,000, including a few females.

The number of persons employed on the coast at the salt works, quarries, and petroleum wells is estimated at 5,000.

The principal minerals of Peru are borate of lime, coal, copper ore, gold, petroleum, salt, and silver ore.

Borates.—Though borates occur in various places, the only deposit which is being worked at a profit at the present time, is that of Salinas, near the boundary between the provinces of Arequipa and Moquegua.

Coal.—All the different varieties of mineral fuel exist in Peru, viz.:—peat, lignite, coal, and anthracite. Lignite is found in the Tertiary rocks on the coast and elsewhere. The true coal and anthracite are found in the Cretaceous and Jurassic rocks in various places, and a solid hydro-carbon, which is neither coal nor anthracite, occurs in veins, and is likewise worked and sold as mineral fuel.

Copper ore.—Rich veins of copper ore exist in the Cerro de Pasco silver mines. The ore and regulus sent away from Cerro de Pasco are estimated to contain more than 5,500 tons of metal.

* Helmhaecker, "The Mineral Resources of Persia," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 38, and *B. u. h. Zeitung*, Vol. LVIII., 1899, p. 272.

† *Berg-und hüt. Zeit.*, Vol. LVIII., 1899, p. 272.

‡ Consul General Temple, "Report on the Trade and Commerce of Khorassan for the Year 1897-98" *Diol. and Cons. Reports*, No. 2202, Ann. Ser., 1899 [C. 9044-28].

§ Garland, *Anuarios sobre la industria mineria 1900*. Lima, 1901.

PERU—continued.

Gold.—The provinces which are richest in gold are Sandia, Carabaya, Paucartambo and Pataz.

Petroleum.—The only places where petroleum is being obtained at the present time are on the coast of the province of Piura.

Silver ore.—This is the principal mineral worked in Peru; the largest mines are Cerro de Pasco. The output of silver has diminished considerably, on account of the drop in price of the metal.

Salt.—The production of salt is a Government monopoly. It is found in abundance in Peru, and occurs in various ways. There are deposits on the coast at Sechura, Huacho, Otuma, Moquegua, &c. In the Andes the salt beds of San Blas are worked on a large scale, and in eastern Peru there is the famous Cerro de la Sal.

Sulphur.—Sulphur is found on all the volcanoes of the Andes in considerable quantities, besides occurring in sedimentary deposits in the department of Piura.

TABLE 468.

MINERALS produced during the YEAR 1900.

Mineral.	Quantity.	Value.
	Metric Tons.	£
Borates	7,080	56,638
Coal	47,500	65,000
Copper ore	35,500	619,261
Gold (Fine)	Kilos. 1,815	223,200
Graphite	12	161
Lead (Ore and Metal)	219	8,512
Petroleum	36,640*	131,903
Quicksilver	11	1,750
Salt	15,000	55,000
Silver (Fine)... ..	Kilos. 265,700	929,575
Sulphur	Kilos. 634	3
Other Minerals	—	3,960
Total value	—	2,094,963

* This quantity is estimated, and it consists partly of refined products.

Philippine Islands.*

It has long been known that the mineral resources of these islands are very varied.

Coal.—Coal and lignite are found on many of the islands, and mining operations are likely to be carried on in the islands of Negros, Cebú, and Bataan.

Copper.—Copper ore occurs in the islands of Benguet, Lepanto, and Panay.

Gold.—Large quantities of gold have been extracted from alluvial deposits and quartz veins.

Iron.—Cebú and Caraballo have deposits of iron ore, which are likely to be worked.

Lead.—The ore of this metal is found in Marinduque, Luzon, and Panay.

Petroleum and Natural Gas.—Mineral oil is known in Cebú, Panay, and Leyte, and Cebú has likewise natural gas.

Quicksilver.—According to the reports of prospectors, there are deposits of quicksilver on Leyte and Panay.

Porto Rico.†

The island of Porto Rico possesses mineral resources which are not likely to remain undeveloped by its new owners.

Coal.—Coal has been found in the western part of the island and at Guatemala.

Copper.—The ores of copper are found in several places.

Gold.—From six to eight thousand dollars worth of gold a year is panned out from the beds of creeks and rivers.

Gypsum.—This mineral is common.

Iron Ore.—There are valuable deposits of iron ore, especially north of Juncos.

Lignite and Peat.—These two minerals occur in many places.

Phosphate of Lime.—Phosphate rock is everywhere abundant. It has been worked on the islet of Mona, in the San Domingo Channel, and about 9,000 tons were exported to Europe in 1894.

Salt.—Rich deposits of salt are known in several places.

Portugal.‡

The mineral products of Portugal, as shown by Table 471, are numerous, but the quantities raised at the present time are not sufficient to entitle it to be called a great mining country. The official statistics omit all mention of the marble, slate, and other stone quarried in the country.

* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242. Rice, "Mining in the Philippines," *Eng. Min. Jour.*, Vol. LXX., 1900, p. 400.

† Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.—"Zur Geologie der Insel Mona in West-Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII., 1899, p. 337.—Domersch "Porto Rico; her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529.

‡ Official Return furnished by the Portuguese Government.

PERU—continued.

Gold.—The provinces which are richest in gold are Sandia, Carabaya, Paucartambo and Pataz.

Petroleum.—The only places where petroleum is being obtained at the present time are on the coast of the province of Piura.

Silver ore.—This is the principal mineral worked in Peru; the largest mines are at Cerro de Pasco. The output of silver has diminished considerably, on account of the drop in price of the metal.

Salt.—The production of salt is a Government monopoly. It is found in abundance in Peru, and occurs in various ways. There are deposits on the coast at Sechura, Huacho, Otuma, Moquegua, &c. In the Andes the salt beds of San Blas are worked on a large scale, and in eastern Peru there is the famous Cerro de la Sal.

Sulphur.—Sulphur is found on all the volcanoes of the Andes in considerable quantities, besides occurring in sedimentary deposits in the department of Piura.

TABLE 468.

MINERALS produced during the YEAR 1900.

Mineral.	Quantity.	Value.
	Metric Tons.	£
Borates	7,080	56,638
Coal	47,500	65,000
Copper ore	35,500	619,261
Gold (Fine)	Kilos. 1,815	223,200
Graphite	12	161
Lead (Ore and Metal)	219	8,512
Petroleum	36,640*	131,903
Quicksilver	11	1,750
Salt	15,000	55,000
Silver (Fine)... ..	Kilos. 265,700	929,575
Sulphur	Kilos. 634	3
Other Minerals	—	3,960
Total value	—	2,094,963

* This quantity is estimated, and it consists partly of refined products.

Philippine Islands.*

It has long been known that the mineral resources of these islands are very varied.

Coal.—Coal and lignite are found on many of the islands, and mining operations are likely to be carried on in the islands of Negros, Cebú, and Bataan.

Copper.—Copper ore occurs in the islands of Benguet, Lepanto, and Panay.

Gold.—Large quantities of gold have been extracted from alluvial deposits and quartz veins.

Iron.—Cebú and Caraballo have deposits of iron ore, which are likely to be worked.

Lead.—The ore of this metal is found in Marinduque, Luzon, and Panay.

Petroleum and Natural Gas.—Mineral oil is known in Cebú, Panay, and Leyte, and Cebú has likewise natural gas.

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† Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.—"Zur Geologie der Insel Mona in West-Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII., 1899, p. 337.—Domesch "Porto Rico; her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529.

‡ Official Return furnished by the Portuguese Government.

PORTUGAL—continued.

Antimony Ore.—The principal antimony mines are in the commune of Gondomar, in the Porto district; the ore likewise occurs in the Braganza district.

Copper.—The deposit of copper-bearing pyrites at San Domingos, in Southern Portugal, furnishes most of the mineral wealth of the country at the present time. There are sundry other mines producing cupreous iron pyrites.

*Iron Ore.**—Rich deposits of iron ore exist, which it is expected will some day become a source of considerable wealth.

Marble.—Though the country cannot boast of treasures of white statuary marble like that of Carrara, it possesses many beautiful varieties of the stone.

Slate.—There are slate quarries at Valongo which are worked by an English company. They produce large slabs for billiard tables, tanks, and cisterns.

Tin Ore and Wolfram.—These minerals occur in the Villa Real and Braganza districts.

TABLE 469.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.†

Kind of Mines	Under-ground.			Above-ground.			Total Under and Above Ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
Coal ...							
Iron ore ...							
Other mines ...							
Total for 1900†							
Total for previous year ...	1,707	—	1,707	2,766	232	2,998	4,705

TABLE 470.

PERSONS EMPLOYED at QUARRIES during the Year 1890.‡

Under-ground.			Above-ground.			Total Under and Above Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
419	—	419	4,240	57	4,297	4,716

* Consul Cowper, "Trade of Southern Portugal for the year 1900." *Dipl. and Cons. Reports*, No. 2635, Ann. Ser. 1901. [Cd. 429-93], pp. 4 and 5.

† Figures for 1900 are yet available.

‡ No later return available.

PORTUGAL—continued.

TABLE 471.

QUANTITY of MINERALS produced during the Years 1899 and 1900.*

Mineral.	1899.		1900.*	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore	59	1,966		
Arsenic	1,083	56,811		
Coal { Anthracite	11,930	42,961		
Lignite	10,269	38,112		
Copper ore	408	27,704		
Copper precipitate	2,521	481,573		
Cupreous iron pyrites	71,576	331,599		
Gold	kilos. 1·2	1,056		
„ quartz	13	65		
Iron ore	15,078	23,670		
Iron pyrites	275,658	350,017		
Lead ore	3,468	96,877		
Manganese ore	2,949	19,893		
Tin ore	30	8,721		
Wolfram... ..	55	12,512		
Zinc	50	641		
Total value in dollars	—	1,494,178		
„ „ £ sterling	—	£233,465		

TABLE 472.

DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.*

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Coal								
Gold								
Iron ore								
Other mines								
Total for 1900								
Total for pre- ceding year }	8	—	8	—	—	—	8	1·70

There were seven deaths from accidents in quarries during the year 1890, giving a death-rate of 1·48 per 1,000 persons employed in that year.

* Figures for 1900 are not yet available.

Portuguese East Africa.

Coal, gems, and gold are said to have been discovered in the district of Lourenço Marques,* and coal on Inyack Island close to Delagoa Bay. Coal has also been found on the Catembe River, some 40 miles from Lourenço Marques, and much prospecting is going on.

Dr. Carl Peters has lately shown that gold exists and has been worked in Macombe's country, south of the Zambesi, and he gives many excellent reasons for supposing that this district is the Ophir of Scripture.†

According to Consul Belcher,‡ 1,826 ozs. of gold, valued at £5,625, were exported from Beira in 1900.

PORTUGUESE NYASSALAND.§

Portuguese Nyassaland possesses large deposits of coal and the ores of iron, gold, and silver. The ores of copper, nickel, and zinc have been discovered, besides graphite, marble, and slate.

Coal.—There are two known coalfields—one within a few miles of the natural harbour afforded by Pemba Bay, the other around Itule, on both sides of the Lugenda River.

Iron.—Magnetic ore occurs over a considerable area just west of the Pemba coalfield, and is smelted on a small scale by the natives.

Gold.—The principal known gold region is the district about the Rarico River, a tributary of the Lugenda.

Prussia. (See GERMAN EMPIRE.)

Roumania.||

The minerals worked in Roumania are lignite, petroleum, rock salt, and stone.

Lignite.—Lignite is found in very many parts of the country, and the beds are sometimes as much as 20 feet thick; but lignite mining is at present in its infancy. The largest mines are at Margineanca, and are worked by the State; they produce 51,000 tons yearly. Great hopes are based upon the utilization of lignite by making it into briquettes with petroleum residues; the fuel so produced is of excellent quality and is cheaper than Welsh coal.

Petroleum.—Petroleum is, and probably always will be, the mainstay of the mining industry in Roumania. The oil-bearing regions are shown on maps in the reports of M. Rommenh  ller¶ and Mr. Sutherland.** The illustrated pamphlet of the latter author affords an excellent account of the present state of the petroleum industry. The total output in 1899 was 300,000 metric tons, obtained partly from shallow hand-dug wells and partly from bore-holes. The Prahova district yields more petroleum than any other at the present time. The official statistics†† show that there are 68 productive bore-holes and 882

* *Zeitschr. f. prakt. Geol.*, 1899, p. 267. Despatch from H.M. Minister at Lisbon to Foreign Office. Consul Ross, "Trade of Lourenço Marques and District for the year 1898." *Dipl. and Cons. Reports*, No. 2235, Ann. Ser. 1899 [C. 9044-61].

† *Jour. Soc. Arts*, vol. xlviii, 1900, p. 343.

‡ "Trade of Beira for the year 1900." *Dipl. and Cons. Reports*, No. 2627, Ann. Ser. 1901 [Cd. 429-85], p. 11.

§ Worsfold, "Portuguese Nyassaland," London, 1899. *Handbook of the Nyassa Company*, London, 1898, p. 30.

|| Alimanestiano, "L'Exploitation des Mines en Roumanie." *Courrier de Roumanie*, Nos. 4, 5, and 6; Bucharest, 1898-99; and "Der Bergbau Rum  niens," *Allgemeine bergm  nnische Zeitschrift*, No. 5, 1899, p. 16; *Le sous-sol de la Roumanie*, 1900, and Cr  mer, *Richesse Min  rale de la Roumanie*, 1900.

¶ Rommenh  ller, *La Roumanie*, Rotterdam, 1898.

** "The Petroleum Industry of Roumania," reprinted from the *Petroleum Review*, April 1899.

†† *Statistica Industriei Miniere din tara (Afara de Cariere) de la 1 Iulie 1897—30 Iunie 1898*; Bucharest, 1899, p. 58; and Cr  mer, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation des P  troles Roumains pr  sent  e au Jury de la Classe 63*.

ROUMANIA—*continued.*

productive wells. The deepest bore-hole is only 550 metres deep, whilst the wells are often only 20 to 100 metres deep. According to M. Alimanestiano, who is Chief of the Mining Department, the most pressing need of the petroleum industry is the establishment of a pipe-line from the wells to the Danube, or even to Costantza. Given cheap transport, Roumania could supply central Europe with oil at lower prices than any of its competitors.

Salt.—The country is blessed with rich deposits of salt, which extend for a distance of about 100 miles along the Carpathians. One bed of pure rock salt is from 800 to 1,000 feet thick.* The industry is a Government monopoly, and much of the work in the rock salt mines is carried on by convict labour. About 22,000 tons of rock salt are exported annually to Turkey and 3,000 to Russia. M. Alimanestiano is of opinion that the export trade might be extended with profit to Africa and even India.

Stone.—Roumania has hitherto been largely dependent upon the foreigner for stone and building materials generally, though ample supplies exist in the country itself, especially in the Dobrudja. However, the paving stones from Belgium and France have now been to some extent ousted by native products, in spite of the difficulties which beset the Roumanian quarry-owner in the shape of expensive transport and want of trained workmen. As these obstacles disappear, quarrying may be expected to become an important industry in the country.

There are already five important granite quarries in the Dobrudja, and the total number of quarries in the country is shown by the official statistics† to be very considerable. There are a few marble quarries.

For centuries the alluvia of many of the rivers have been known to carry gold, and a little of the precious metal is occasionally washed from the sands by the peasantry; but the gold resources of Roumania are as yet unknown. The same may be said of the ores of cobalt, copper, lead, manganese, mercury, iron, and silver, and of the beds of anthracite and coal, which have been found cropping out in various parts of the country.

TABLE 473.

OUTPUT of MINERALS during the Years 1899 and 1900.‡

Mineral.	1899.		1900.	
	Metric Tons.	Value.	Metric Tons.	Value.
		Lei.		Lei.
Lignite	78,000	624,000	86,000	648,000
Petroleum	313,000	9,300,000	385,000	11,550,000
Salt	98,600	(Monopoly.)	92,000	(Monopoly.)
Stone	4,800,000	3,968,000	1,900,000	1,570,000
Total value in Lei	—	13,892,000§	—	13,768 000§
„ „ £ Sterling	—	£555,680	—	£550,720

* Crémér, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation du Gisement de sel gemme de la Roumanie présentée au Jury de la Classe 63.*

† *Statistica Carierelor din țara, 1897*; Bucharest, 1898.

‡ Official Return furnished by the "Département de l'Agriculture, du Commerce, de l'Industrie et des Domaines" Bucharest.

§ Excluding value of salt.

Russia.

Whether judged by the number of persons employed, or by the value of the products obtained, the workings in Russia for coal, gold, iron ore, manganese ore, petroleum, platinum, and salt, are worthy of much attention.

Coal.—The quantity of coal raised in Russia has risen very considerably of late, for the total output in 1882 was 3 $\frac{3}{4}$ million tons, and 16 million tons in 1900. The most productive coal region of Russia is the Donetz Basin, in the province of Ekaterinoslav, which yields anthracite and bituminous coal. In 1899 there were 135 different collieries in this basin, with pits varying in depth from 28 yards (26 metres) to 417 yards (382 metres). The number of persons employed in 1898 was about 40,000 underground and 10,000 above ground. The output of the basin, which in 1880 was only 624,000 tons, had risen in 1898 to 7,453,000 tons. The output per person employed therefore was only 150 tons per year. Mr. Taskine* explains this by the fact that owing to the number of fête days the Donetz miner works only 240 days in the year instead of 300. Next in importance comes Poland, with true coal and brown coal. The Dombrows Basin,† in Poland, is a continuation of the great Silesian Coal Basin; it is now yielding about 4 million tons a year, or about half the output of the Donetz Basin. These two basins together produce about two-thirds of the coal of Russia. The remaining coal regions‡ worth mentioning are the Urals, the Eskibastus district south of Omsk, the Kusnetski Basin, in the Government of Tomsk, and the Tkhibulski district, in the Caucasus.

Coal is abundant in Siberia, both east and west, and even along the line of the Trans-Siberian Railway; but the quality is poor. A long list of localities is given by Mr. Cooke in his report upon the Trans-Siberian Railway.§ The Eskibastus coalfield alone, in the neighbourhood of Pavlodar, on the Irtysh, is estimated to have reserves of more than 3,000 millions of tons.

The coal of Saghalien is being worked on a large scale, and is used for steamships.

Copper.—Most of the copper of Russia comes from the Urals and the Caucasus. The yield for 1900 from the Urals was 3,710 tons.

Gold.—In 1898 the output|| of gold of Russia was 2,346 poods, or 1,235,764 ozs. The gold is derived mainly from alluvial deposits in the Urals, and in Eastern and Western Siberia; the localities where it is being worked are shown upon a useful map prepared by M. de Batz.¶ According to Rickmer,** a large number of persons are employed in Eastern Bokhara in washing auriferous gravel. The value of the gold obtained is estimated at £20,000 to £30,000 annually. The production of gold from the Urals in 1900 was 291,235 ozs.††

Iron.—The known iron-ore districts of Southern Russia‡‡ are:—(a) Krivoy Rog and neighbourhood, (b) Donetz Basin, (c) Kertch Peninsula, (d) Korsack Mogila, (e) Government of Voronej. The Kertch Peninsula appears to be the most favoured district, for its reserves are estimated to amount to 645 million tons. The ore contains on an average 38 to 40 per cent. of iron, 2 to 4 of manganese and 1 per cent. of phosphorus. The iron industry of Russia‡‡ is making rapid progress; the total output of pig iron has risen from 1 million tons in 1891 to 2 $\frac{3}{10}$ million tons in 1900. The increase is especially remarkable in the southern mineral region of Russia.

Manganese ore.§§—The output of the manganese mines of Chiatur in the Caucasus continues to increase. The shipments from Poti and Batoum in 1900 reached the large total of 426,179 tons.

* Taskine, *L'industrie Houillère dans le Bassin du Donetz*. St. Petersburg, 1900.

† Consul-General Murray and Vice-Consul Kiemens, "Trade of Poland and Lithuania for the year 1899," *Dipl. and Cons. Reports*, No. 2425, Ann. Ser., 1900 [Cd. 1-62], p. 37.

‡ Cooke, "Coal Crisis in Russia," *Dipl. and Cons. Reports*, No. 523, Misc. Ser., 1900 [Cd. 2-6], p. 6.

§ *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 17.

¶ Cooke, "Trans-Siberian Railway," *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 18.

¶¶ "The auriferous deposits of Siberia," *Trans. Am. Inst. M.E.*, Vol. XXVIII., 1898.

** "Travels in Bokhara," *Geogr. Jour.*, London, Vol. XIV., 1899, p. 606.

†† Cooke, "Mineral and Metallurgical Industries of Russia," *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Cd. 430-10].

‡‡ Consul Hunt, "Trade of Taganrog and District for the year 1899," *Dipl. and Cons. Reports*, No. 2447, Ann. Ser., 1900 [Cd. 1-84], p. 5.

§§ Consul Stevens, "Trade of Batoum and District for the year 1900," *Dipl. and Cons. Reports*, No. 2623, Ann. Ser., 1900 [Cd. 429-81].

RUSSIA—continued.

Peat.—Though peat may appear an unimportant fuel compared with coal, it nevertheless is so abundant and is so easily obtained in certain localities far removed from railways that it deserves special attention. In Russia there is an office under the Ministry of Agriculture and Domains (*Bureau de l'Industrie des Tourbes*) which supervises the peat industry. Many of the turbaries have been carefully tested by borings, and an official map exhibited at the Paris Exhibition gave information about 113 turbaries, occupying an area of 398 sq. miles (103,000 hectares); several are from 19 to 38 sq. miles (5,000 to 10,000 hectares) in area and over.

*Petroleum.**—The production of the oil wells near Baku continues to increase, the total output being 60,076,391 barrels (42 gallons) of crude oil in 1900 against 52,519,739 barrels in the previous year. The Sabounchi field was the most productive of the five oil-fields near Baku. In the five districts there were in 1900 altogether 2,916 wells at which work was going on; 1,321, or less than half, were producing, whilst the remainder were either being bored, deepened, cleared out, or prepared. The average depth of the producing wells in 1900 was 749 feet on the Balakhany field, 847 on the Sabounchi, 1,428 on the Romany, 1,211 on the Bibi-Eibat, and 392 on the Binagadi.

Russia's wealth in petroleum is not confined to the Baku district. Great hopes are based upon the new oil field near the river Uchta† on the boundary of the provinces of Archangel and Wologda.

Platinum.—All the platinum is obtained from alluvial deposits in the Urals; the output in 1900 was 174,846 ozs.‡ Russia produces 96 per cent. of the world's supply of this metal.

Quicksilver.—All the quicksilver is obtained in the district of Ekaterinoslav, in South Russia; the deposits were first worked in 1885.

Salt.—More than half the salt is a harvest from lakes, especially in Astrakhan and the Crimea. Much salt is obtained by evaporating brine pumped up from boreholes, and some by mining beds of rock-salt.

In Western Siberia salt is obtained from a number of lakes which partially dry up in summer and in hot years deposit crusts of salt from two to four inches thick. The great Burlinsk Lake yields 20,000 tons yearly in this fashion.§

In Eastern Siberia the salt is obtained from springs, and from deposits of rock salt.§

Sulphate of sodium.—The great Marmischanski Lake, in the Government of Tomsk, is estimated to contain more than a million tons of sulphate of sodium; about 1,600 tons are obtained from it annually, and some of it is used for making soda.§

Sulphur.||—Native sulphur occurs in various parts of the Empire; it is worked in Daghestan and at Czarkowsky, in the Government of Kielce, near the Austrian frontier.

Zinc ore.—The zinc ore is obtained from deposits of calamine in Poland.

TABLE 474.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1896, 1897, and 1898.¶

Year.	Total Number of Persons Employed.
1896	242,463
1897	244,324
1898	286,983
1899**	

* Consul Stevens, "Trade of Batoum and District for the year 1900." *Dipl. and Cons. Reports*, No. 2623, Ann. Ser., 1900 [Cd. 429-81].

† R. von Vangel, "Petroleum in the Uchta District." *Boring & Drilling*, Vol. II., 1901, p. 89.

‡ Cooke, "Mineral and Metallurgical Industries of Russia," *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Cd. 430-10].

§ Thiess, "Die Salzgewinnung in Siberien." *Zeitschr. B. H. Salinenwesen*, Vol. XLVI., 1898, p. 249.

¶ Consul-General Murray, "Trade of Warsaw and District for the year 1897." *Dipl. and Cons. Reports*, No. 2135, Ann. Ser., 1898 [C. 8648-157].

¶ Official return furnished by the Scientific Mine Committee, St. Petersburg.

** Complete figures for 1899 not yet available.

· RUSSIA—continued.

TABLE 475.

PERSONS EMPLOYED at the PRINCIPAL KINDS of MINES and other MINERAL WORKINGS during the Years 1897, 1898, and 1899.*

Kind of Mineral worked.	Persons Employed during the Year.		
	1897.	1898.	1899.
Coal	65,471	70,203	85,446
Copper ore	3,998	3,965	3,857
Gold	75,212	77,518	97,973
Iron ore	39,490	41,786	†
Manganese	2,849	2,349	†
Naphtha	11,936	18,616	25,809
Platinum	8,050	8,034	9,197
Salt	18,104	15,582	20,377
Silver-lead ore	1,359	1,229	1,222

TABLE 476.

PERSONS EMPLOYED at GOLD MINES during the Years 1897, 1898, and 1899.*

Year.	Number of Persons Employed.				
	Urals.	West Siberia.	East Siberia.	Finland.	Total.
1897	36,223	10,405	28,558	26	75,212
1898	37,483	11,141	28,831	63	77,518
1899	48,545	24,691	24,737	†	97,973

TABLE 477.

QUANTITY of MINERALS produced during the Years 1899 and 1900.*

Mineral.	District whence Obtained.	1899.	1900.
		Quantity.	Quantity.
		Metric Tons.	Metric Tons.
Asbestos	Ural	1,066†	†
Asphalt and mineral pitch	Syzran, Caucasus	12,902†	†
China clay	Volyn, Chernigov	6,667†	
Chrome ore	Perm, Orenburg, Oufa	15,760†	†
Coal { Anthracite Coal Lignite	Donetz, Poland, Moscow, Ural, Kutais, Turkestan, Tomsk, Kirgiz Steppe, Saghalien, Oussoury. }	13,985,443	16,151,557

* Official return furnished by the Scientific Mine Committee, St. Petersburg.

† Figures not yet available.

‡ The figures relate to the year 1898, later information not being available.

RUSSIA—continued.

TABLE 477—continued.

QUANTITY of MINERALS produced during the Years 1899 and 1900—continued.

Mineral.	District whence Obtained.	1899.	1900.
		Quantity.	Quantity.
		Metric Tons.	Metric Tons.
Cobalt ore and regulus	Caucasus	3†	•
Copper	Ural, Western Siberia, Caucasus, Finland	7,063	6,941
Gold	Ural, Eastern and Western Siberia, Lapland	Kil. 38,868†	•
Iron (pig)	Ural, Central Russia, Poland, Southern Russia, Northern Russia, Siberia, Finland.	2,710,972	2,907,289
Iron pyrites	Ural, Toula, Novgorod	24,590†	•
Lead	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Turkestan	176	229
Manganese ore	Kutais, Ural, Ekaterinoslav	659,842	633,979
Petroleum	Caucasus, Transcaspien, Turkestan	8,599,344†	9,827,823†
Phosphorite	Bessarabia, Kostroma, Podolia, Smolensk	1,868†	•
Platinum	Ural	Kil. 5,946†	Kil. 5,438†
Quicksilver	Ekaterinoslav	362	306
Salt { Rock salt Lake salt Salt from brine }	Astrakhan, Perm, Ekaterinoslav, Crimea, Kharkov, Orenburg, Tomsk, Caucasus, &c.	1,506,886†	•
Silver	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Finland ..	Kil. 1,385	Kil. 3,493
Sulphate of sodium	Tiflis, Kuban, Tomsk, Vologda	5,049†	•
Sulphur	Daghestan, Poland, Turkestan	1,018†	•
Tin	Finland	•	•
Zinc	Poland	6,331	5,967

TABLE 478.

DEATHS from ACCIDENTS at the MINES and other WORKINGS for MINERALS during the Years 1896, 1897 and 1898.||

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1896	272	1.12
	1897	308	1.26
	1898	463	1.61

Saba. (See DUTCH WEST INDIES.)

Sahara,¶

There are three important salt deposits in the Sahara, all of which are due to the natural evaporation of salt lakes, viz., the Sebka d'Idgil, which supplies Western Africa; the Taodeni bed, which furnishes salt to the Sahel, the Niger district, and the Congo; and lastly, the Sebka de Bilma, which sends its produce to the east and the region of Lake Tchad.

* Figures not yet available.

† The figures relate to the year 1898, later information not being available.

‡ Cooke, "Mineral and Metallurgical Industries of Russia," *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Cd. 430-10].

§ Official return furnished by the Scientific Mine Committee, St. Petersburg. Later figures are not available.

¶ Dastre, "Le Sel," *Revue des Deux Mondes*, Vol. LXXI., 1901, p. 219.

Sandwich Islands.*

The mineral industries of the Sandwich Islands are of slight importance. There are large deposits of gypsum, and red and yellow ochre; sulphur is found around the volcanoes.

The extraction of salt from sea water is carried on to supply local wants.

Saxony. (See GERMAN EMPIRE.)

St. Martin. (See DUTCH WEST INDIES.)

Senegal.†

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives. In 1898, 129 kilograms of gold, valued at £15,464, were exported.

Servia.‡

According to an official map Servia is richly endowed with mineral wealth, but until railways have been constructed and the existing cart roads improved it is idle to expect that it will become a great mining country. It possesses deposits of the ores of antimony, arsenic, chromium, copper, gold, iron, lead and mercury, besides coal, graphite, gypsum, magnesite, sulphur, marble and other stones for ornamental and building purposes.

Coal.—Most of the coal region lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are at Dobra, on the Danube. The coal is of Liassic Age.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley, near Tschuka.

Thick beds of Tertiary lignite occur at Senje, Sisovac, Jelasnica, and in many other parts of the country.

Copper and Iron.—The ores of these two metals have been worked in the neighbourhood of Maidanpek.

Gold.—This was worked in Servia by the Romans, and then many centuries later by the Austrians. Turkish invasions put a stop to mining, but now there are signs of a revival and extension of the industry. The gold is found in alluvial gravel and in quartz veins, especially in the district west of the River Timok, which forms the frontier of Bulgaria. Near Glogovica there are many veins of gold-bearing pyrites.

TABLE 479.
 PERSONS EMPLOYED at MINES during the Years 1898 and 1899.

	Year.	Under and Above-ground.
1898	1,849	
1899	2,070	

In addition to the above, there were 120 persons employed in and about quarries.

* Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.

† Consul Arthur, "Trade of Senegal and Dependencies for the year 1898," *Dipl. and Cons. Reports*, No. 2372, Ann. Ser., 1900 [Cd. 1-9], and *Min. Jour.*, Vol. LXVIII., 1898, p. 221.

‡ Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce, and Industry, Belgrade; Consul Macdonald "Trade of Servia for the years 1897-98," *Dipl. and Cons. Reports*, No. 2207, Ann. Ser., 1899 [C. 9044-33]; Antula, *Revue générale des gisements métallifères en Serbie*, Paris, 1900; and Jastrow, "The Mining Industries of Servia," *Eng. Min. Jour.*, Vol. LXX., 1900, p. 523.

SERVIA—continued.

TABLE 480.

QUANTITY and VALUE of MINERALS produced during the Years 1898 and 1899.

Mineral.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony (regulus)	163	118,919	180	131,400
Brown coal	54,077	492,805	69,684	504,711
Coal... ..	13,057	205,680	16,605	299,236
Copper (metal)	1,394	191,127	270	507,581
Lead do.	150	58,500	283	117,200
Lignite	26,390	120,870	25,948	139,014
Millstones	63	51,145	449	Not stated.
Total value in francs ...	—	1,239,046	—	1,699,142
" " £ sterling ...	—	£49,562	—	£67,965

There were no fatal accidents at mines during the years 1898 and 1899.

Siam.*

Siam produces gems, gold, and tin ore. The gems, rubies and sapphires, are obtained from shallow diggings on the flanks of the Patat range in the Cambodian Peninsula. The gem pits afford employment to five or six thousand Shans and Laos, and the value of the output is estimated to be about £300,000 annually. Alluvial gold exists and has been worked in many parts of Siam, notably near Lophburi; reef-mining has been carried on at Kabin and Wattana.

The tin mines of the State are chiefly situated in the Siamese Malay Provinces, along the edge of the granites of the main ridge which forms the watershed of the Peninsula. The total annual output of metallic tin may be estimated at about 4,000 tons, giving employment to over 15,000 persons, mostly Chinese. The royalty on tin has now been reduced to 10 per cent. of the output, and this will enable a certain number of mines, which would not pay under the old royalty, to be re-worked.

Singkep. (See DUTCH EAST INDIES.)

Soudan. (See EGYPT, FRENCH SOUDAN AND SAHARA.)

* M.S. communication from H. Warrington Smyth, and Bel, "Aperçu sur les gîtes minéraux de l'Indo-Chine Centrale," *Bull. Soc. Ind. Min.*, Vol. XII., 1898, p. 384.

Spain.*

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrites than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality, and it has lately become an important supplier of manganese ores.

In spite of its wonderful resources, the total number of persons employed in and about mines in Spain is only 83,662.

Coal.—Ten of the provinces produce coal. The total output is two-and-a-half million tons, more than half coming from Asturias. Anthracite is worked on a small scale in the province of Cordova, and lignite in eight provinces; but the total output is insignificant.

Copper.—The Rio Tinto mines and its neighbours show no signs of impoverishment, for the output of the province of Huelva was 2,686,606 tons. Compared with this figure, the production of the other copper-bearing provinces, such as Seville, &c., is small.

Gold.—Mines are being worked in the province of Corunna.

Iron Ore.—The province of Biscay, which includes the Bilbao district, is the great stronghold of the iron industry in Spain; most of the workings are open quarries, for out of a total of 13,149 persons employed, only 55 worked below ground. The total output of the province in 1900 was 5,361,796 tons, which is a diminution of more than a million tons compared with the previous year.

Next in importance after Biscay comes the province of Santander with an output of 1,117,017 tons.

Lead.—Most of the lead comes from the provinces of Jaen and Murcia; much of the ore, and especially that of Murcia, contains a notable amount of silver.

Manganese Ore.—Mining for manganese, comparatively speaking a new industry, is almost entirely confined to the province of Huelva. The output of the province in 1900 was 112,131 tons.

Quicksilver.—From time immemorial the Almaden mine, in the province of Ciudad Real, has been renowned as a producer of cinnabar. The other quicksilver mines are of comparatively little importance; several are worked in the province of Oviedo.

Salt.—Much of the salt is obtained from sea water, especially in the vicinity of Cadiz.

Sulphur.—In addition to the sulphur contained in cupreous iron pyrites, Spain has mines of native sulphur in the provinces of Albacete and Murcia.

Tin Ore and Wolfram.—These two minerals occur together, as they do elsewhere, in the province of Pontevedra.

Zinc.—Santander is now the principal zinc-producing province, Murcia has had to take the second place. The two provinces between them produce about $\frac{3}{4}$ of the country's total.

TABLE 481.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.†

Year.				Men.	Women.	Boys.	Total.
1899	...	...	...	67,296	3,063	9,899	80,258
1900	...	...	...	71,052	3,386	9,224	83,662

* *Estadística Minera de España correspondiente al año de 1900.* Madrid, 1901.† *Estadística Minera de España correspondiente al año 1899 and ibid. 1900,* Madrid, p. 24.

SPAIN—continued.

TABLE 482.

PERSONS EMPLOYED in the PRINCIPAL MINING INDUSTRIES during the Years 1899 and 1900.*

Kind of Mines	1899.				1900.			
	Men.	Women.	Boys.	Total.	Men.	Women.	Boys.	Total.
Brown coal (lignite) ...	730	31	108	869	847	31	108	986
Coal and anthracite ...	14,235	1,161	2,679	18,075	15,963	1,089	2,635	19,687
Copper ore and cupreous pyrites.	7,329	183	939	8,451	8,638	191	1,034	9,863
Iron ore	20,120	238	1,897	22,255	21,372	220	1,814	23,406
Lead ore	16,558	606	2,476	19,640	16,526	974	2,563	20,063
Quicksilver ore	1,915	3	177	2,095	1,747	2	200	1,949
Zinc ore	1,696	165	343	2,204	1,437	165	262	1,864
Other mines	4,713	676	1,280	6,669	4,522	714	608	5,844
Total	67,296	3,063	9,899	80,258	71,052	3,386	9,224	83,662

TABLE 483.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.*

Mineral	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Aluminous earths	685	16,127	420	10,500
Anthracite	34,842	491,278	68,427	1,190,076
Antimony ore	50	7,800	30	4,500
Arsenical Pyrites	—	—	515	2,575
Asphalt (rock)	2,542	25,722	4,193	43,160
Barium sulphate	887	15,356	833	7,840
Brown coal	70,901	393,151	91,133	507,337
China clay	2,790	37,700	3,794	40,171
Clay	—	—	770	4,550
Coal	2,565,437	23,900,572	2,514,545	23,501,618
Copper ore	1,103	84,543	2,006	105,235
Cupreous iron pyrites... ..	2,441,941	14,840,462	2,712,708	46,124,832
Fluor spar	310	3,750	4	300
Gold ore... ..	1,110	35,300	1,300	39,000
Iron ore	9,397,733	43,001,056	8,675,749	37,994,605

* Estadística Minera de España correspondiente al año 1899 and 1900 Madrid, p. 24.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900*—
continued.

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
Iron pyrites	Metric Tons. 107,386	Pesetas. 525,909	Metric Tons. 34,638	Pesetas. 121,235
Jet	kilos. 6	26	2	250
Lead ore... ..	128,361	23,872,041	131,437	27,248,138
Lead ore, argentiferous	184,906	38,122,534	182,016	34,376,448
Lead and zinc ores	1,000	10,000	—	—
Manganese ore	104,974	1,765,438	112,897	1,901,607
Mineral waters... ..	19,770,137	669,536	19,239,928	723,721
Ochre	100	2,000	58	1,160
Phosphorite	3,510	175,500	4,170	92,950
Quicksilver ore... ..	32,144	6,373,016	30,216	5,521,185
Salt	598,131	5,455,896	450,059	4,172,674
Silver ore	764	393,606	742	655,340
Silver ore, ferruginous	17,139	130,255	26,348	333,305
Steatite	4,844	133,111	8,109	234,020
Sulphur rock	58,922	510,750	64,364	549,733
Tin ore (dressed)	57	42,250	47	35,815
Topaz	kilos. 44	3,755	kilos. 95	3,755
Tungsten ore (Wolfram)	151	70,710	1,958	501,670
Zinc ore	119,770	6,044,937	86,158	3,088,254
Mixed ores	50	350	—	—
Total values in Pesetas ...	—	167,154,437	—	189,137,559
„ „ „ £ sterling ...	—	£6,686,177	—	£7,565,502

DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.†

Year.	Number of Deaths by Accidents.	Number of Persons seriously Injured.	Death-rate per 1,000 Persons Employed.
1899	222	274	2.77
1900	227	205	2.71

† " " " " " , pp. 26 and 27.

SPAIN—*continued*.

TABLE 485.

DEATHS from ACCIDENTS at MINES, classified according to CAUSE, during the Years 1899 and 1900.*

Cause.	1899.		1900.	
	Number of Deaths by Accidents.	Percentage of Total.	Number of Deaths by Accidents.	Percentage of Total.
Falls of ground	44	19·8	51	22·5
Explosions of firedamp	4	1·8	1	0·4
Blasting	27	12·2	13	5·7
Suffocation by gases	15	6·7	4	1·8
Falling down shafts	25	11·3	21	9·2
Breaking of machinery, &c.	30	13·5	39	17·2
Miscellaneous	77	34·7	98	43·2
Total	222	100·0	227	100·0

Spanish Possessions. (See CANARY ISLANDS.)

Spitzbergen.†

Coal has been discovered in several places in Spitzbergen. Bear Island is said to possess workable seams of excellent coal.

Sumatra. (See DUTCH EAST INDIES.)

Surinam. (See DUTCH GUIANA.)

Sweden.‡

Coal.—All the Swedish collieries are in Scania, the most southerly province of the kingdom. The seams, which are of Rhætic age, are interstratified with beds of fire-clay, and the two minerals are worked together.§ The thickness of the coal seams, including the partings of shale, varies from three to five feet.

Copper.—The well-known Stora Kopparberg mine close to Falun furnishes much of the copper of Sweden, some of the silver, and nearly all of the gold.

* *Estadística Minera de España correspondiente al año 1899 and ibid. 1900*, Madrid, pp. 26 and 27.† *B.u.h. Zeitung*. Vol. LIX., 1900, p. 476.‡ *Bidrag till Sveriges Officiella Statistik för år 1900*, Stockholm, 1901.§ Nordenström, *L'industrie minière de la Suède*, Stockholm, 1897.

SWEDEN—continued.

Iron ore.—Sweden, which has long been famous as an iron-producing country, is likely to furnish important supplies of ore to British blast furnaces in the near future, when the Kiirunavaara and Luossavaara deposits in the province of Norrbotten, within the Arctic Circle, are rendered available for export at all seasons of the year by railway communication with the west coast of Norway. The Gellivare mines, which are connected by rail with the port of Luleå on the Gulf of Bothnia, furnished 1,044,020 tons in 1900, or nearly two-fifths of the total output of iron ore in Sweden.

Peat.—The table of production takes no account of either the peat diggings or of the stone quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould.

Stone.—Granite, using the word in its commercial sense, is quarried on the West Coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden.

Zinc.—The Ämmeberg mines supply most of the zinc ore, which is exclusively blende.

TABLE 486.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1899 and 1900.

Year.	Kind of Workings.	Under-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1899	Coal mines	1,222	107	1,329	350	40	390	1,719
"	Iron "	3,834	112	3,946	4,161	956	5,117	9,063
"	Other "	931	4	935	731	374	1,105	2,040
"	Feldspar quarries ...	86	—	86	99	90	189	275
	Total for 1899 ...	6,073	223	6,296	5,341	1,460	6,801	13,097
1900	Coal mines	1,281	128	1,409	385	40	425	1,834
"	Iron "	4,072	129	4,201	4,548	1,091	5,639	9,840
"	Other "	816	3	819	746	355	1,101	1,920
"	Feldspar quarries ...	72	—	72	123	72	195	267
	Total for 1900 ...	6,241	260	6,501	5,802	1,558	7,360	13,861

SWEDEN—continued.

TABLE 487.

QUANTITY OF MINERALS obtained from MINES and FELDSPAR QUARRIES during the Years 1899 and 1900.

Mineral.	Year.			
	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum	164	18,210	167	17,610
Coal	239,344	1,797,180	252,320	2,202,884
Cobalt oxide	kil. 1,345	16,800	—	—
Copper ore	22,334	409,119	22,725	370,713
Copper, sulphate	1,287	400,000	1,265	500,000
Feldspar	16,017	185,338	15,228	185,830
Fire-clay	129,875	204,144	160,585	249,162
Graphite (raw and dressed)	535	6,200	84	11,800
Iron ore	2,435,200	13,438,525	2,609,500	14,961,953
Iron pyrites	150	1,350	179	1,540
Iron, sulphate	105	5,491	183	9,225
Manganese ore	2,622	44,740	2,651	49,175
Manganese ore in powder	377	17,000	450	20,250
Silver and lead ore	5,730	222,480	5,300	262,137
Sulphur	—	—	70	7,000
Zinc ore	65,159	2,755,069	61,044	1,908,135
Other minerals	—	64,304	—	52,466
Total value in crowns	—	19,585,950	—	20,809,880
" " £ sterling	—	£1,088,979	—	£1,143,400

TABLE 488.

PERSONS KILLED and INJURED by ACCIDENTS at MINES and FELDSPAR QUARRIES during the Years 1899 and 1900.

Year.	Number of Persons Killed.	Number of Persons Injured.*	Death-rate per 1,000 Persons Employed.
1899	16	285	1.22
1900	14	370	1.01

Switzerland.†

That the mineral industries of Switzerland are of little importance is evident from the following tables ; nevertheless the kinds of mineral which are being obtained from underground workings are numerous, viz.: anthracite, bituminous limestone, brown coal, cobalt and nickel ore, fireclay, gold ore, graphite, gypsum, iron ore, limestone, magnesium sulphate, marble, marl, potstone, salt, sandstone, and slate.

* Injuries causing absence from work for 14 days at least.

† *Rapports des Inspecteurs Fédéraux des Fabriques et des Mines dans les années 1898 et 1899, Aarau, 1900 : Notice sur les exploitations minérales de la Suisse* Geneva, 1896 ; und *Statistisches Jahrbuch der Schweiz*, Bern, Vol. X., 1901.

SWITZERLAND—*continued.*

Anthracite.—Two mines, Chandoline and Granges, produce annually 1,500 to 2,000 tons of anthracite containing a high percentage of ash.

Bituminous limestone.—The asphalt rock of the Val de Travers, which is exported from Switzerland to various countries, is a bituminous limestone of Cretaceous age. The bed is 4 to 8 m. thick, and contains about 10 per cent. of bitumen.

Brown coal and cement.—With reference to the Swiss brown coal, which is of Miocene age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure.

Iron.—The largest workings for iron are at Delsberg, a mine which employs 136 workmen.

Salt.—Switzerland possesses five workings for salt, viz., Bex salt mine in the Rhone valley; the brine wells of Rheinfelden, Ryburg, and Kaiseraugst, in the Canton Aargau; and the brine well Schweizerhalle in the Canton Baselland. The output for 1900 was 49,284 tons.

TABLE 489.

NUMBER OF PERSONS EMPLOYED AT MINES AND UNDERGROUND QUARRIES during the Years 1897-8 and 1898-9.*

Kind of Workings.	1897-8.		1898-9.	
	Number of Works.	Number of Persons Employed.	Number of Works.	Number of Persons Employed.
Mines	20	459	22	405
Underground quarries ...	107	1,405	115	1,472
Total	127	1,864	137	1,877

TABLE 490.

NUMBER OF WORKINGS AND PERSONS EMPLOYED, classified according to MINERAL worked during the Year 1898-99.*

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Anthracite	5	—	30	—
Asphalt	1	—	120	—
Brown coal	2	—	17	—
Brown coal and cement stone	7	—	56	—
Cement stone and hydraulic limestone ...	—	29	—	29
Cobalt and nickel ores	1	—	10	—
Gold and copper ore	1	—	2	—

* Later returns are not yet available.

SWITZERLAND—continued.

NUMBER OF WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year 1898-99—continued.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Graphite	1	—	8	—
Gypsum	—	13	—	84
Iron ore	1	—	108	—
Lead ore, argentiferous	1	—	16	—
Limestone... ..	—	2	—	10
Magnesia, sulphate of	1	—	12	—
Marble	—	1	—	14
Potstone	—	1	—	23
Salt (rock salt)	1	—	26	—
Sandstone... ..	—	9	—	370
Slate	—	59	—	668
	—	1	—	4
Total	22	115	405	1,472

TABLE 491.

QUANTITY of MINERALS produced during the Years 1899 and 1900.

Mineral.	Year.	
	1899.	1900.
	Metric Tons.	Metric Tons.
Anthracite	*	*
Bituminous limestone	*	*
Brown coal	*	*
Cement (Portland)	211,183	203,663
„ (Roman)	19,654	17,497
Cobalt and nickel ore... ..	*	*
Fireclay	*	*
Gold ore	*	*
Graphite	*	*
Gypsum	59,852	51,240
Iron ore	*	*
Lime (hydraulic)	215,126	283,320
Magnesium sulphate	*	*
Marble	*	*
Marl	*	*
Potstone	*	*
Pozzolana	18,200	16,200
Salt (Bex mine and brine wells)	46,893	49,284
Sandstone	*	*
Slate	*	*

* Figures not available.

SWITZERLAND—*continued.*

TABLE 492.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1897-1899.*

Kind of Workings.	1897-8.		1898-9.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines	1	2.18	1	2.47
Underground quarries	3	2.14	4	2.72

Tong-King. (See INDO-CHINA.)

Tunis.

Tunis cannot be called an important mining country at the present time.

Phosphate of lime.†—This mineral is found in the Lower Eocene rocks, especially to the north and south of the mountain chain running from Wady Stah, near Gafsa, to Tamerza; the beds may be followed for a distance of about 40 miles. The crude rock contains from 58 to 62 per cent. of phosphoric acid.

The value of the phosphate deposits at Gafsa is now beyond all question. The company‡ employs 850 persons at its workings.

The line open to the public is 243 kilometres (157 miles) long, and 5 more kilometres (3 miles), for the use of the mines and drying works, make a total of 248 kilometres (160 miles) belonging to the company.

Salt.—This mineral is obtained from salt marshes and lakes, especially at Rhadès. The salt-pans worked by the State produced in 1897 8,100 tons of salt which was sold at about 24 francs per ton, and in 1898, 7,300 tons at 22 francs per ton.

An important salt lake at La Soukhra, near Tunis, fed by salt-water from the sea and covering an area of more than 15 square miles, becomes completely dried up in summer, and leaves a deposit of salt from 3 to 6 inches in thickness. 8,000 tons of salt were exported from this lake in 1899. The total thickness of salt in the middle of the dried up lake is 4 feet, and gradually diminishes towards the sides.

Zinc ore.—The lead and zinc mines of Tunis employ about 1,300 workmen, of whom 400 are Europeans, and the total value of their output in 1899 was more than £77,000; of this total about $\frac{2}{3}$ ths must be credited to zinc ore.

* Later returns are not yet available

† *Etude des gisements de phosphates de Gafsa et du Chemin de fer de Sfax à Gafsa.* Paris, 1896

‡ *Compagnie des phosphates et du chemin de fer de Gafsa (Tunisie).* Rapport au Conseil d'administration, Paris, 1900, p. 4.

TUNIS—continued.

TABLE 493.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Flags	2,000	20,000	200	2,000
Lead ore	3,319	361,640	6,864	591,000
Limestone	12,000	240,000	17,929	358,575
Marble	—	—	—	—
Phosphate of lime	70,000	840,000	178,459	3,905,000
Plaster	10,200	255,000	13,555	270,000
Potter's clay	5,800	11,600	—	79,400
Salt from marshes and salt lakes	8,850	177,000	9,160	641,000
Stone (dressed for building)	190,000	320,000	—	3,747,000
„ (broken)	45,000	67,000	—	—
Zinc ore (calcined)	20,029	1,567,217	16,596	1,108,000

Turkey.†

The mineral resources of the Ottoman Empire are great, but almost entirely undeveloped. No official statistics are published.

Alum.—A little alum is manufactured.

Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895. In 1900 the quantity exported from Salonica amounted to 267 tons, valued at £2,793.§

Arsenic.—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly; both orpiment and realgar are mined in Macedonia. 270 tons, valued at £4,320, were exported from Salonica in 1900.§

Asphalt.—This mineral is being mined near Salonica, and it is known to exist in other places.

Boracite.—Borate of calcium, known in the trade as boracite, and to mineralogists as pandermite, is worked near the port of Panderna in Asia Minor. The annual output is from 10,000 to 11,000 tons.||

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1899 et pour l'année 1900.*

† Exclusive of 3,000 tons of calamine from prospecting operations.

‡ Helmhacker, "The Useful Minerals of Turkey." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 635.

§ Consular Assistant Avalon Shipley, "Trade of Salonica and District for the year 1900." *Dipl. and Cons. Reports*, No. 2,730, Ann. Ser., 1901 [Cd. 786-34]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-99," *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99], p. 23.

|| *Oest. Zeitsch. f. B. u. Hüttenwesen*, Vol. XLIV., 1897, p. 223.

TURKEY—continued.

Chrome ore.—Chromite occurs in irregular bunches in serpentine; 9,749 tons, valued at £24,467, were shipped from Salonica and Kossovo in 1900.*

* *Coal.*—The only coal mines deserving mention at the present time are at Heraclea. The present output of the Eregli collieries is stated to be 270,000 tons per annum.†

Copper.—Copper ores have been worked in various places; nowadays the output is extremely small. 1,400 tons of copper from Arghana Maden and about 1,000 tons from Bakir Maden near Diarbekir were exported‡ in 1900.

Emery.—This mineral was discovered in Asia Minor about fifty years ago; 16,051 tons, valued at £56,742, were shipped from Smyrna in 1899.*

Fuller's earth is quarried on a large scale near Angora.†

Gold.—A little alluvial gold is obtained in Thessaly and in some of the valleys of Macedonia. The river Pactolus, so famous in ancient times, no longer yields gold.

Iron.—The deposits of iron ore which were utilized in former days have ceased to be worked.

Manganese.—There are manganese mines in Macedonia and in Asia Minor. 38,100 tons of ore, valued at £114,300, were exported from Salonica in 1900.*

Marble.—Beautiful mottled marble is now being quarried in the Island of Scio.*

Meerschaum.—Mining meerschaum is an industry of some importance near Broussa in Asia Minor, where sometimes 1,000 men are employed.† The output is about 60 tons of clean meerschaum yearly.

Petroleum.—No attempt has been made to ascertain the value of the oil springs known in old Servia, near Broussa, and in Armenia.

Salt.—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. The rock salt mines are worked near Van in Armenia. 203,128* tons of salt were produced in the year 1893–4. Rock salt is also widely distributed over many parts of Tehama.§

Silver-lead.—Deposits of argentiferous galena appear to be worked on a small scale at Edremid and near Adana.

Zinc Ore.—Calamine deposits are worked by a French company in the Island of Scio.*

United States.||

The United States are the greatest producers of coal, iron, and copper in the world.

Coal.¶—The total production of coal in 1900 was 244,901,839 metric tons, of which 52,057,999 tons were anthracite and 192,843,840 true bituminous coal. More than one-

* Consular-Assistant Avalon Shipley, "Trade of Salonica and District for the Year 1900." *Dipl. and Cons. Reports* No. 2,730, Ann. Ser., 1901 [Cd. 786–34]. Consul General Cumberbatch, "Trade of Smyrna and District for the Years 1897–99." *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1–99].

† Vice-Consul Sarell, "Trade of Constantinople for the Years 1899 and 1900." *Dipl. and Cons. Reports*, No. 2,650, Ann. Ser., 1901 [Cd. 429–108].

‡ Consul Barnham, "Trade of Vilayet of Aleppo for the Year 1900." *Dipl. and Cons. Reports*, No. 2,587, Ann. Ser., 1901 [Cd. 429–45]; and Consul Lamb, "Trade of Erzeroum and District for the Year 1900." *Dipl. and Cons. Reports*, No. 2,657, Ann. Ser., 1901 [Cd. 429–115].

§ Consul Devey, "Trade of Jeddah and Hodeidah for the Year 1897." *Dipl. and Cons. Reports*, No. 2,203, Ann. Ser., 1899 [C. 9044–29].

¶ Many useful statistics relating to the United States and much valuable information concerning mines and minerals all over the world are contained in Mr. Rothwell's annual volumes entitled, *The Mineral Industry: Its Statistics, Technology, and Trade*.

* Parker, "The Production of Coal in 1900." *Twenty-second Annual Report of the U.S. Geological Survey*, 1900–1, Washington.

UNITED STATES—continued.

half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

In the case of anthracite there is a decrease of nearly 2,800,000 tons, whilst bituminous coal shows an increase of more than $14\frac{1}{2}$ million tons; taking anthracite and bituminous coal together, there is a net increase of nearly 12 million tons.

Mr. Parker, the statistician of the United States Geological Survey, furnished last year an interesting report* concerning the coal mined by machines during the years 1896-1900, and there is no doubt that the enormous increase in the output has been largely due to machine mining. His table is now rendered more interesting by the addition of the figures for 1900.

TABLE 494.

BITUMINOUS COAL MINED by MACHINES in the UNITED STATES during the Years 1896-1900.

States.	Year.				
	1896.	1897.	1898.	1899.	1900.
	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).
Colorado	318,172	352,400	225,646	527,115	756,025
Illinois	3,871,410	3,946,257	3,415,635	6,085,312	5,083,594
Indiana	964,378	1,023,361	1,414,342	1,713,125	1,774,045
Kentucky	—	1,299,436	1,366,676	1,625,809	2,339,944
Montana	579,414	720,345	681,613	843,710	1,045,115
Ohio	3,368,349	3,843,345	5,191,375	6,822,524	8,835,743
Pennsylvania	6,092,644	8,925,293	16,512,480	22,000,722	26,867,053
West Virginia	430,944	673,523	1,323,929	1,881,125	3,418,377
Wyoming	419,647	555,526	631,431	693,712	653,314
Other States producing less than half a million tons each annually.	379,974	1,309,734	1,650,017	1,770,779	2,017,313
Total	16,424,932	22,649,220	32,413,144	43,963,933	52,790,523

The whole question of the employment of coal-cutting machinery in the United States forms the subject of a recent report† by Bergassessor Mellin, of Berlin. He says that in the year 1891 only 6·7 per cent. of the output of bituminous coal was obtained by the aid of coal-cutting machinery; in 1900 the proportion had risen to 25 per cent.

The kinds of machines employed are set forth in the following table.

* Parker. "The Production of Coal in 1899." *Twenty-first Annual Report of the U.S. Geological Survey*, 1899-1900, Washington, 1900, p. 61.

† *Glückauf*, Vol. xxviii., 7 Dec., 1901, p. 1,057.

UNITED STATES—continued.

TABLE 495.

COAL-CUTTING MACHINES employed in the UNITED STATES in the Year 1899, arranged according to their mode of action.

State.	Chain Machines.				Percussive Machines.				Long Wall Machines.	Total.
	Jeffrey.	Link belt.	Morgan Gardner.	Other systems.	Ingersoll-Sergeant.	Sullivan.	Harrison.	Other systems.		
Alabama	10	—	—	—	38	1	2	—	2	53
Arkansas	12	4	—	—	—	—	—	—	—	16
Colorado	22	—	4	—	5	2	27	3	—	63
Illinois	39	23	15	—	130	35	180	18	—	440
Indiana	—	5	63	16	8	6	149	—	—	217
Indian Territory	14	2	—	—	30	1	21	—	6	74
Iowa	13	—	—	—	—	—	22	—	6	41
Kansas	—	—	3	—	—	—	—	—	—	3
Kentucky	22	15	13	—	39	11	89	—	—	189
Maryland	—	—	—	—	6	—	2	—	—	8
Michigan	1	—	7	—	5	—	12	—	—	25
Missouri	—	—	—	—	—	—	—	1	8	9
Montana	1	9	—	—	30	—	35	—	—	75
New Mexico	1	4	9	—	—	—	—	—	—	14
North Dakota	1	—	—	—	—	4	—	—	—	5
Ohio	131	2	112	15	2	—	16	—	—	278
Pennsylvania	248	25	122	4	254	236	386	68	—	1,343
Tennessee	6	—	—	—	10	4	2	—	—	22
Virginia	—	—	—	—	—	—	—	8	—	8
Washington	—	—	—	—	—	—	2	—	—	2
West Virginia	40	6	53	—	—	15	40	—	—	154
Wyoming	3	—	—	11	33	2	7	—	—	56
Total	564(a)	95	401	46	530	317	992	98	22	3,125

(a) 114 of which are driven by compressed air.

Copper.—There are three great copper States : Montana, Michigan, and Arizona ; the first furnished in 1900 more than 45 per cent. of the total output of the whole country, which was 275,008 metric tons of metal, equal to nearly three-fifths of the world's production.

Gold.—The principal gold-producing states are Colorado with a yield in 1900 of 1,394,622 ozs., and California with a product of 765,109 ozs.

Granite.—The value of granite quarried in 1900 amounted to \$12,675,617. The principal producing States are Maine, Massachusetts, New Jersey and Vermont.

Iron.—The two chief iron-producing States are Michigan and Minnesota ; the former produced more than 10 million metric tons of ore in 1900, and the latter very nearly

UNITED STATES—continued.

that quantity. The total output of the United States was 28 million metric tons, an increase of almost 3 million tons compared with 1899.

Lead.—Idaho was the greatest producer in 1900, followed closely by Colorado; whilst Utah and Montana are likewise large lead-producing States. The total production of 270,824 short tons was the largest obtained in any year in the United States.

Marble.—The value of the total output of marble in 1900 amounted to \$4,267,253; of this amount Vermont contributed \$2,484,852, or more than one-half.

Mineral Waters.—The output of all the mineral springs in the United States amounted to 47,558,784 gallons, valued at \$6,245,172. The leading State is Wisconsin, with a production of almost 10,000,000 gallons. Next comes Texas and New York, while Ohio, Pennsylvania and Virginia also are large producers.

Natural Gas.—The value of the natural gas obtained from boreholes was in 1900 nearly 5 millions sterling, which amount represents a production of 127,602,500,000 cubic feet.

Petroleum.—The yield of the oil-wells of the United States almost equals that of all the rest of the world put together. In 1900 the production was 63,362,704 barrels of 42 gallons.

The principal oil-producing States are Pennsylvania, New York, West Virginia, Ohio, Indiana, and California. Texas also has recently sprung into prominence as a great producer.

Phosphate of lime.—The three great phosphate States are Florida, South Carolina, and Tennessee, with a production in 1900 of 706,243, 329,173 and 454,491 tons respectively.

Quicksilver.—With the exception of small quantities from Texas and Oregon all the quicksilver comes from California.

Salt.—Since 1893 New York has been the leading salt producing State; in 1900 the output of this State was nearly 8,000,000 barrels; Michigan ranks second with over 7,000,000, and the total production of the whole country amounted to almost 21,000,000 barrels.

Silver.—Colorado, in spite of its slightly decreased production, yields about two-fifths of the total output of silver, and Montana nearly one-fourth. The total production in 1900 amounted to 57,647,000 ozs., with a coining value of \$74,533,495.

*Zinc.**—Zinc ore is abundant in the United States; Arkansas, Kansas, Missouri, New Jersey, and Wisconsin produce the bulk of the zinc.

It is beyond the province of this Report to enter into minute details concerning each individual State; but a few facts relating to those in which mining is one of the important industries may with propriety be inserted from time to time.

ILLINOIS.†

Among the coal-producing States, Illinois comes second, though a very long way behind Pennsylvania. The output of Illinois in 1900 was more than 23 million metric tons.

The death-rate from accidents, viz.:—2·4 per 1000 persons employed, is very close to that of Pennsylvania. Taking the underground workpeople separately, the death-rate for 1900 is 2·55.

The amount of coal cut by machinery is about half a million tons less than in the previous year, although the number of machines employed is larger.

PENNSYLVANIA.‡

The most important Mining State is Pennsylvania, which produced 79,318,362 short tons of bituminous coal in 1900, as against 73,066,943 in 1899, and 51,217,318 long tons of anthracite, as against 54,034,224. The decrease in the output of anthracite is solely due to an unfortunate strike. The number of persons employed in and about mines of bituminous coal in 1900 was 109,018, and in and about anthracite mines 140,583. The death-rate per 1,000 persons employed in and about bituminous mines was 2·43, and in and about anthracite 2·86; both these figures are considerably higher than the corresponding death-rates in the United Kingdom.

* Vice-Consul Erskine, "Zinc Industry in the United States." *Dipl. and Cons. Report*, No. 550, Misc. Ser., 1901 [Cd. 430-5].

† *Nineteenth Annual Coal Report prepared by the Illinois Bureau of Labor Statistics*, 1900, Springfield, Ill., 1901.

‡ *Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania*, 1900, Harrisburg, 1901.

UNITED STATES—continued.

TABLE 497.

PERSONS EMPLOYED at COAL MINES in the various STATES during the Years 1899 and 1900.*

State.	1899.		1900.	
	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.
Alabama	13,481	563	13,967	601
Arkansas... ..	2,313	365	2,800	517
California	369	436	378	454
Colorado	7,166	667	7,459	703
Georgia	567	411	597	529
Idaho	—	—	—	—
Illinois	36,756	665	39,101	659
Indiana	9,712	618	11,720	553
Indian Territory	4,084	376	4,525	425
Iowa	10,971	472	11,608	448
Kansas	8,000	482	8,459	528
Kentucky	7,461	618	9,680	551
Maryland	4,624	1,040	5,319	757
Michigan	1,291	484	1,704	499
Missouri	7,136	424	8,180	433
Montana	2,378	629	2,376	699
New Mexico	1,750	600	2,037	638
North Carolina	70	384	84	211
North Dakota	210	470	326	398
Ohio	26,038	633	27,628	687
Oregon	124	701	141	417
Pennsylvania { Anthracite	139,608	433	144,206	398
{ Bituminous	82,812	895	92,692	861
Tennessee	6,949	479	8,246	450
Texas	2,410	367	2,844	340
Utah	743	1,058	1,308	877
Virginia	1,960	1,074	3,631	659
Washington	3,330	610	3,670	674
West Virginia	23,625	815	29,163	777
Wyoming	4,697	817	5,332	753
Total for United States ...	410,635	618	449,181	601

* Official Return furnished by the United States Geological Survey, Washington.

UNITED STATES—continued.

TABLE 498.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1899 and 1900.*

Product.	Customary Measures.	1899.			1900.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Non-Metallic.</i>							
Asbestos	Short tons ..	681	618	11,740	1,054	956	16,310
Asphaltum	" ..	75,085	68,135	553,904	68,429	62,095	491,598
Barytes	" ..	41,894	37,109	139,528	67,680	61,416	188,089
Bauxite	Long tons ..	35,280	35,856	125,598	23,184	23,563	89,676
Borax	{ refined crude } ..	20,357	18,472	1,139,882	1,602 24,235	1,454 21,992	170,036 848,215
Bromine	Pounds ..	433,004	196	108,251	521,444	237	140,790
Building stone	—	—	—	44,090,670	—	—	47,958,539
Cement	Bls., 300 lbs. ..	15,520,445	2,112,583	12,889,142	17,225,131	2,344,619	13,279,167
Chromic iron ore	Long tons ..	—	—	—	140	142	1,400
Clay (brick)	—	—	—	11,250,000	—	—	12,000,000
" (all other than brick) ..	—	—	—	1,645,328	—	—	1,840,377
Coal, anthracite†	Long tons ..	53,944,647	54,825,776	88,142,130	51,221,353	52,057,999	85,757,861
" bituminous	Short tons ..	193,321,987	175,428,300	167,935,304	212,513,912	192,843,840	221,133,513
Cobalt oxide	Pounds ..	10,230	5	18,512	6,471	3	11,648
Corundum and emery	Short tons ..	4,900	4,446	150,800	4,305	3,907	102,715
Feldspar	Long tons ..	27,202	24,684	238,545	21,353	19,377	173,659
Fibrous talc	" ..	54,855	49,597	438,150	63,500	57,623	499,500
Flint	" ..	36,852	33,441	229,345	32,495	29,487	179,351
Fluorspar	" ..	15,900	14,428	96,850	18,450	16,742	94,500
Fuller's earth	" ..	12,381	11,235	79,644	9,688	8,804	67,535
Garnet (abrasive)	" ..	2,765	2,509	98,325	3,185	2,890	123,475
Graphite	{ Crystalline Amorphous } ..	2,900,732 2,324	1,316 2,362	167,106	5,507,855 611	2,459 621	197,579
Grindstones	—	—	—	675,586	—	—	701,121
Gypsum	Short tons ..	486,235	441,230	1,287,080	594,462	539,439	1,627,203
Infusorial earth and Tripoli ..	" ..	4,634	4,205	37,032	3,615	3,280	24,207
Limestone for iron flux	Long tons ..	6,707,435	6,816,984	4,695,205	7,495,435	7,617,865	4,500,000
Magnesite	Short tons ..	1,280	1,162	18,480	2,252	2,044	19,333
Manganese ore	Long tons ..	9,935	10,097	82,278	11,771	11,963	100,289
Marls	Short tons ..	60,000	54,431	30,000	60,000	54,431	30,000
Mica	{ Sheet Scrap } ..	108,570 1,505	49 1,530	70,587 30,878	456,393 5,453	207 5,542	92,758 54,302
Millstones	—	—	—	28,115	—	—	32,858
Mineral waters	{ Gallons sold Litres .. } ..	39,562,136 167,229,130	—	6,948,030	47,558,784 201,030,980	—	6,245,172
Monazite	Pounds ..	350,000	159	20,000	908,000	412	48,805
Natural gas	—	—	—	20,074,873	—	—	23,606,463
Oilstones	—	—	—	208,283	—	—	181,011
Paints, mineral	Short tons ..	63,111	57,270	728,389	72,222	65,537	881,363
Petroleum	{ Bls., 42 gals. Litres .. } ..	57,070,850 10,890,644,951	7,247,092	64,603,904	63,362,704 11,249,034,292	—	75,752,691
Phosphate rock	Long tons ..	1,515,702	1,540,459	5,084,076	1,491,216	1,515,573	5,359,248
Precious stones	—	—	—	185,770	—	—	233,170
Pumice stone	Short tons ..	400	363	10,000	—	—	—
Pyrates	Long tons ..	174,734	177,588	543,249	204,615	207,957	749,991
Rutile	Pounds ..	230	—	1,030	300	—	1,300
Salt	Bls., 280 lbs. ..	19,708,614	2,502,681	6,867,467	20,869,342	2,650,075	6,944,603
Soapstone	Short tons ..	24,765	22,473	330,805	27,943	25,357	383,541
Sulphur	" ..	4,830	4,383	107,500	3,525	3,199	88,100
Zinc, white	" ..	40,146	36,430	3,211,680	48,840	44,319	3,667,210
Total value of non-metals in \$ ..	.. ..	—	—	445,428,651	—	—	516,890,262
Total value of non-metals in £ sterling. ..	.. ..	—	—	£91,529,570	—	—	£106,172,868

* Official Return furnished by the United States Geological Survey, Washington.

† Represents production from Pennsylvania only.

UNITED STATES—continued.

TABLE 498—continued.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES,
1899 and 1900—continued.

Product.	Customary Measures.	1899.			1900.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Metals.</i>							
Aluminium	Pounds	5,300,000	2,358	1,716,000	5,300,000	2,358	1,716,000
Antimony	Short tons ..	1,375	1,157	251,875	1,750	1,588	345,850
Copper	Pounds	568,666,921	258,016	101,222,712	606,117,166	275,006	92,494,639
Gold (fine)	Troy ounces ..	3,457,210	—	71,053,400	3,837,215	—	79,233,261
	Kilos.	106,912			119,918		
Iron, pig	Long tons ..	13,620,708	13,543,183	245,172,654	13,789,242	14,014,475	259,944,000
Lead	Short tons ..	210,500	191,016	18,945,000	270,824	245,787	23,561,888
Nickel	Pounds	22,541	10	8,566	9,715	4	3,936
Platinum	Troy ounces ..	300	—	1,800	400	—	2,500
	Kilos.	9			18		
Quicksilver	Flasks 76½ lbs. ..	30,454	1,057	1,453,745	26,317	982	1,302,566
Silver (fine)	Troy ounces ..	54,764,500	—	70,806,636	59,610,543	—	77,970,471
	Kilos.	1,703,406			1,862,839		
Zinc	Short tons ..	129,051	117,106	14,840,865	123,836	112,419	10,654,196
Total value of metals in \$ .. .. .	.. .. .	—	—	525,472,243	—	—	562,418,927
.. .. £ sterling .. .. .	.. .. .	—	—	£107,977,448	—	—	£113,514,564
Estimated value of products unspecified. .. .. .	.. .. .	—	—	\$1,000,000	—	—	\$1,000,000
Total value in \$ .. .. .	.. .. .	—	—	971,900,894	—	—	1,070,106,899
.. .. £ sterling.. .. .	.. .. .	—	—	£199,712,502	—	—	£219,929,918

The following tables give further details concerning the output of coal and iron ore:—

TABLE 499.

COMPARATIVE OUTPUT for the Years 1899 and 1900 in the principal COAL-PRODUCING STATES.*

State.	1899	1900.	Comparison with previous Year.
	Metric Tons.	Metric Tons.	Metric Tons.
Illinois	22,176,970	23,491,224	+ 1,314,254
Ohio	14,973,023	17,332,146	+ 2,359,123
Pennsylvania { Anthracite ..	54,825,776	52,057,999	— 2,767,777
	Bituminous ..	71,956,456	+ 4,669,542
West Virginia	17,470,958	20,442,568	+ 2,971,610
Other States	53,520,435	59,621,446	+ 6,101,011
Total	230,254,076	244,901,839	+ 14,647,763

* Compiled from the Reports of the various States.

UNITED STATES—continued.

TABLE 500.

PRODUCTION of IRON ORES.*

State.	Red Hematite.	Brown Hematite.	Magnetite.	Carbonate.	Total.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
Michigan ...	9,772,970	138,381	177,519	—	10,088,870
Minnesota ...	9,995,033	—	—	—	9,995,033
Alabama ...	2,022,188	782,128	—	—	2,804,316
Other States ...	1,288,998	2,363,356	1,385,146	77,493	5,114,993
Total for 1900 ...	23,079,189	3,283,865	1,562,665	77,493	28,003,212
„ 1899 ...	20,331,150	2,916,660	1,755,645	82,891	25,086,346

TABLE 501.

DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1899 and 1900.†

State.	1899.			1900.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Alabama ...	40	3.11	169,752	30	2.15	241,916
Colorado ...	41	5.72	105,681	29	3.99	171,919
Illinois† ...	84	2.27	264,011	94	2.39	242,758
Indiana ...	16	1.65	340,564	18	1.82	316,661
Indian Territory† ...	25	6.24	50,963	40	8.84	43,094
Iowa† ...	20	2.49	224,497	29	2.22	160,080
Kansas ...	16	2.00	218,420	—	2.60	183,627
Kentucky ...	7	0.94	597,091	17	1.59	267,923
Maryland ...	5	1.08	872,240	§	—	—
Missouri† ...	14	1.96	196,070	10	1.28	271,704
Montana ...	§	—	—	7	2.95	184,007
New Mexico† ...	15	8.57	63,546	15	7.44	71,809
Ohio ...	57	2.19	262,611	—	2.46	254,885
Pennsylvania { Anthracite ...	461	3.30	118,894	411	2.86	126,616
	258	3.12	260,728	265	2.43	271,534
Tennessee ...	20	2.60	169,468	10	1.15	354,169
Utah ...	§	—	—	209	138.96	5,356
Washington ...	42	12.61	43,845	33	7.79	66,473
West Virginia† ...	89	3.77	196,248	141	5.03	136,099
Wyoming ...	§	—	—	24	4.50	151,198

* Return furnished by the United States Geological Survey, Washington.

† Compiled from the Reports of Inspectors of Mines for the various States, and *Eng. Min. Jour.*, Vol. LXXII, 1901, p. 166.

‡ For Fiscal Year ended June 1899 and 1900.

§ No report.

UNITED STATES—continued.

On the 1st May, 1900, a very bad coal dust explosion occurred at Winter Quarters Mine, in the State of Utah, causing the loss of two hundred lives. The explosion originated from the accidental ignition of a keg of gunpowder; a cloud of dust was formed and ignited, carrying flames into many of the working places, and setting fire to twenty-nine other kegs of gunpowder. Most of the victims were suffocated by the after-damp.*

An explosion at Red Ash Coal Mine in West Virginia, on the 6th March, 1900, caused 46 deaths. Here the coal was known to give off gas in the advanced workings, and it is probable that gas was ignited by a workman with a naked light, who entered a working place before the statutory examination had been made by the "fire-boss."†

Statistics concerning all the fatalities at ore mines are lacking.

There were 24 deaths from accidents,‡ equivalent to 3.62 per 1,000 persons employed, at the iron mines of Marquette County (Michigan) during the year ended 30th September 1900, and 27 deaths from accidents,§ equivalent to 2.07 per 1,000 persons employed at the Lake Superior copper mines during the year ended 30th September 1899.

United States Possessions.—(See CUBA, PHILLIPINE ISLANDS, AND PORTO RICO.)

Uruguay.

The number of persons employed at mines and quarries in the Republic of Uruguay is unknown. Auriferous quartz appears to be the principal mineral worked; as the quantity of gold obtained is only 71 kilos, the number employed in mining is not likely to be large.

TABLE 502.

QUANTITY and VALUE of GOLD|| produced in 1899 and 1900.¶

Mineral	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Kilos.	£	Kilos.	£
Gold ...	61	5,851	71	6,669

Venezuela.**

According to official statements the country abounds in asphalt, coal, petroleum, salt, and sulphur, as well as in the ores of copper, gold, iron, lead, silver, and tin; but these rich mineral resources are almost entirely neglected.

Asphalt.—This mineral is beginning to attract attention; but the quantity exported from Maracaibo in 1899 was only 79 tons.

* Report of the Coal Mine Inspector for the State of Utah for the years 1899 and 1900, Salt Lake City, 1901, p. 65.

† Paul, *Sixteenth, Seventeenth, and Eighteenth Annual Reports. Coal Mines in the State of West Virginia, U.S.A., for the years ending 30th June, 1898, 1899, and 1900.* Charleston, 1901, p. 303.

‡ Annual Report of the Inspector of Mines for Year ending 30th September 1900. Ishpeming, 1900.

§ " " " " 1899. " " 1899.

|| Fine Gold 70%, Fine Silver 30%.

¶ Return furnished by the "Departamento Nacional de Ingenieros. Seccion Industrial y de Minas," Montevideo.

** Acting Consul Andral, "Trade of Caracas and District for the Year 1899," *Dipl. and Cons. Reports*, Nos. 2,466, 1900 [Cd. 1-103], and Consul de Lemos, "Trade of Ciudad Bolivar for the Year 1900," *Dipl. and Cons. Reports*, No. 2,633, Ann. Ser., 1901 [Cd. 429-91].

VENEZUELA—*continued.*

Gold.—The precious metal is obtained mainly from quartz veins in the Caratal or Yuruari district. The great diminution in the quantity exported is probably due to a high tax on all gold leaving the country, which tends to smuggling.

Iron.—The deposits of iron ore at Imataca, on the Lower Orinoco, are not yet being worked.

Salt is a Government monopoly; the net amount of revenue from this source in 1898 was 1,019,573 bolivares, or £161,517.

TABLE 503.

QUANTITY and VALUE of GOLD exported from Ciudad Bolivar in 1899 and 1900.

1899.		1900.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 1,316	£ 120,975	Kilos. 600	£ 63,904

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1. *Journal of the American Medical Association*, 1997; 277: 1033-1038.

INDEX.

		Page
A.		
ABERDEEN, Clay	162, 178	
" Gravel and sand	162, 213	
" Igneous rocks	162, 216	
" Limestone	163, 254	
" Sandstone	163, 268	
" Slate	163, 272	
" Persons employed	65, 163	
Abyssinia, Minerals	303, 356	
Accidents, Fatal, at Mines in the United Kingdom 66-93, 118, 119, 309		
" " Mines under the Coal Mines Act 9, 22, 23, 40		
" " Mines under the Metalliferous Mines Act 9, 24, 25, 41, 70		
" " Quarries under the Quarries Act 9, 26, 27, 94-103, 309		
" " in the several Coal-fields 90-92		
" " at Coal Mines 72, 75		
" " Boiler explosions 22, 23, 87, 88, 91, 92		
" " Descent or ascent 22-25, 80, 91, 92		
" " Explosions of Fire-damp or Coal-dust 22, 23, 40, 41, 67, 68, 73-77, 91, 92, 118, 119		
" " Explosives 22-25, 82, 83, 91, 92		
" " Falls of ground 22-25, 40, 41, 68, 73, 77-79, 91, 92, 118, 119		
" " Haulage 22, 23, 91, 92		
" " Inclined or engine planes 22, 23, 82, 91, 92		
" " in the several Inspection districts 22-25		
" " at Iron Mines 72, 75		
" " Irruptions of water 22, 23, 82, 84, 91, 92		
" " Miscellaneous underground 22-25, 40, 41, 81, 82, 91, 92, 118, 119		
" " on surface 22-25, 87		
" " Machinery 22-25, 80, 82, 86, 87, 91, 92		
" " at "other Mines" than Coal and Iron 72, 75		
" " Overwinding 22, 23, 91, 92		
" " Railways, sidings, &c. 22-25, 87, 89, 91, 92		
" " Ropes and chains breaking 22-25, 80, 82, 91, 92		
" " Shafts 22-25, 40, 41, 68, 73, 79-81, 91, 92, 118, 119		
" " Shot-firing 75		
" " Suffocation by natural gases 22, 23, 82, 84, 91, 92		
" " Surface 22-25, 40, 41, 68, 73, 87-89, 91, 92, 118, 119		
" " Trams and tubs 22, 23, 82, 91, 92		
" " Underground fires 22, 23, 82, 84, 91, 92		
" " haulage 22, 23, 82, 84-86		
" " Haydock Colliery 67, 75		
" " Portland No. 5 Pit 67		
" " at Mines in :—		
Algeria 304, 358		
Austria 304, 364-366		
Belgium 304, 375		
Bohemia 367		
Bosnia and Herzegovina 304, 370		
British Columbia 304, 317, 318		
British Guiana 304, 313		
Cape Colony (Kimberley Diamond Mines) 304, 322-324		
Ceylon 304, 326		
Federated Malay States 304, 329		
France 304, 392		
German Empire 304, 400, 401		
Gold Coast 330		
Greece 304, 411		
Holland 304, 413		
Hungary 304, 369		
India 304, 336, 337		
Italy 304, 418-420		
Japan 304, 422		
Kimberley 304, 322-324		
Mexico 304, 424		
Natal 304, 338		
Accidents, Fatal, at Mines in—cont.		
Newfoundland 304, 339		
New South Wales 304, 342		
New Zealand 304, 344		
Nova Scotia 304, 318		
Ontario 304, 320		
Portugal 304, 431		
Prussia 406-408		
Queensland 304, 347		
Russia 437		
Saxony 410		
Spain 304, 442, 443		
Sweden 304, 445		
Switzerland 304, 448		
Tasmania 304, 351		
United States 304, 457		
Victoria 304, 354		
Western Australia 304, 355		
Le Roi Mine 318		
Aniche Collieries (France) 393		
Besshi Ikikoku (Japan) 422		
Winters Quarters Mine (Utah) 458		
Red Ash Coal Mine (West Virginia) 458		
at Quarries :—		
in United Kingdom 9, 26, 27, 94-103		
from Blasting 26, 27, 97, 100, 101		
at different kinds of Quarries 94, 97		
during descent and ascent 26, 27, 98, 99, 101		
Escape of gas, steam, or metal 26, 27, 98		
Explosives 26, 27, 100, 101		
Falling from paths, steps, or ladders 26, 27, 98, 101		
" " ledges 26, 27, 98, 102		
Falls of ground 26, 27, 97, 99		
Inclined and engine planes 26, 27, 98		
in the several Inspection districts 26, 27		
Machinery 26, 27, 98, 101-103		
Miscellaneous, inside and outside 26, 27, 97-99, 102, 103		
Railways, tramways, &c. 26, 27, 98, 102, 103		
Ropes or chains breaking 26, 27, 98, 102		
at Quarries in :—		
Algeria 304, 358		
Belgium 304, 375		
Ceylon 304, 326		
France 304, 393		
German Empire 304, 402		
Italy 304, 420		
Portugal 431		
Switzerland 304, 448		
at Petroleum Workings :—		
Austria 364		
" at Sulphur Mines in Sicily 419		
Non-fatal, at Mines 28-31		
Quarries 32, 33		
Acts of Parliament relating to Mines and Quarries 5, 112-117		
Aden, Output of Salt 303, 310		
Alabama, Accidents 457		
Persons employed 454		
Coal-cutting machines 452		
Algeria, Accidents 304, 305, 358		
Mineral output 303, 357		
Persons employed 302, 356		
Alum, Output of :		
German Empire 398		
India 332, 335		
Prussia 405, 406		
Sweden 445		
Alum clay (<i>see</i> Bauxite).		
Alumina, Production of United Kingdom 174		
Aluminium, Makers in United Kingdom 175		
Output of United Kingdom 141, 174, 309		
" United States 455		
sulphate, Output of German Empire 398		
Prussia 406		
Aluminous earths, Output of France 391		
Spain 441		
hematite, Production of Ireland 223		
Alum shale, Output of United Kingdom 10, 38, 141, 166, 308		
Austria 362		
stone, Output of Italy 418		

	Page.	P
Alunite, Output of New South Wales ...	341	
Amber, Output of India ...	332, 334	
Amblygonite, Output of France ...	391	
Amethyst, Output of France ...	391	
Ammonite, Accidents with ...	82	
Amvis, Accidents with ...	82	
Anglesey, Copper ore and precipitate ...	162, 201, 202	
" Gravel and sand ...	162, 213	
" Igneous rocks ...	162, 215	
" Lead ore ...	242, 244	
" Limestone ...	163, 253	
" Ochre ...	163, 257, 258	
" Sandstone ...	163, 268	
" Silver ...	242, 244	
" Zinc ore ...	163, 285, 286	
" Copper smelters ...	208	
" Persons employed ...	62, 65, 163	
Annam, Mineral output ...	414	
Anthracite, Output of :		
United Kingdom ...	184	
France ...	391	
Italy ...	418	
Portugal ...	431	
Russia ...	436	
Spain ...	441	
United States ...	445	
Antimony, Price in London ...	167	
" Smelters and refiners ...	167	
Antimony or Antimony ore, Output of :		
United Kingdom ...	167	
Algeria ...	357	
Austria ...	362	
Bolivia ...	376	
France ...	391	
Hungary ...	368	
Italy ...	418	
Japan ...	421	
Mexico ...	423	
New South Wales ...	341	
New Zealand ...	344	
Portugal ...	431	
Queensland ...	346	
Servia ...	439	
Spain ...	441	
Turkey ...	449	
United States ...	455	
Antrim Co., Bauxite ...	165, 174	
" Chert and flint ...	164, 177	
" Clay ...	164, 179	
" Coal ...	164, 183, 186	
" Igneous rocks ...	164, 216	
" Iron ore ...	164, 219, 221, 223	
" Limestone ...	165, 254	
" Salt ...	165, 265	
" Sandstone ...	165, 269	
" Persons employed ...	57, 59, 62, 66, 165	
Apatite, Output of Norway ...	426	
Appeals ...	112	
Arabia, Mining in ...	358	
Argentine Republic, Mineral output ...	303, 358	
Argyll, Coal ...	162, 183, 186	
" Igneous rocks ...	162, 216	
" Limestone ...	163, 254	
" Sandstone ...	163, 268	
" Slate ...	163, 272	
" Persons employed ...	56, 65, 163	
Armagh Co., Gravel and sand ...	164, 214	
" Igneous rocks ...	164, 216	
" Limestone ...	165, 254	
" Persons employed in Quarries ...	66, 165	
Arsenic or Arsenic ore, Output of :		
United Kingdom ...	10, 17, 38, 141, 169, 170, 308	
Canada ...	316	
France ...	391	
German Empire ...	397	
Japan ...	421	
Ontario ...	319	
Portugal ...	431	
Prussia ...	405	
Turkey ...	449	
Arsenic refiners ...	171	
Arsenical pyrites, Output of :		
United Kingdom ...	10, 17, 38, 141, 168, 169, 308	
Italy ...	418	
Saxony ...	409	
Spain ...	441	
Aruba, Mineral Output ...	387	
Asbestos, Output of :		
Canada ...	316	
Cape Colony ...	322	
France ...	392	
India ...	332, 335	
Quebec ...	320	
Russia ...	433	
Asbestos, Output of—cont.		
Tasmania ...	...
United States ...	...
Western Australia ...	...
Asphalt, Output of :		
Austria ...	...
German Empire ...	...
Hungary ...	...
Italy ...	...
Mexico ...	...
Prussia ...	...
Russia ...	...
Spain ...	...
Trinidad ...	...
United States ...	...
Venezuela ...	...
Atkinson, W. N. Remarks on the use of rivets in		
Safety Lamps ...	...
Austria, Accidents ...	304, 305, 364	
" Mineral output ...	303, 362	
" Persons employed ...	302, 360	
" Electro-technical Society of Vienna, Rules of		
Legislation ...	...
Ayrshire, Clay ...	162	
" Coal ...	162, 183	
" Gravel and sand ...	162	
" Igneous rocks ...	162	
" Iron ore ...	162, 219	
" Limestone ...	163	
" Oil shale ...	163	
" Sandstone ...	163	
" Blast furnaces ...	223	
" Coal conveyed by rail ...	...
" Death rate from accidents ...	...
" Persons employed ...	56, 59, 62, 65, 93	
B.		
BAHAMAS, Output of Salt ...	308	
Persons employed ...	302	
Bain, R. D. Remarks on the use of Electric Lamps ...		
Banca, Output of Tin ...	...
Persons employed ...	...
Banff, Gravel and sand ...	162	
" Igneous rocks ...	162	
" Limestone ...	163	
" Sandstone ...	163	
Persons employed ...	65	
Barbados, Minerals obtained in ...	...
Barytes, Output of :		
United Kingdom ...	10, 16, 17, 19, 38, 141, 150, 156, 173	
Bavaria ...	...
Belgium ...	...
Canada ...	...
France ...	...
Nova Scotia ...	...
Quebec ...	...
Saxony ...	...
Spain ...	...
United States ...	...
Basalt, diorite, &c. (see also Igneous rocks) Output of		
Bavaria ...	...
Basic iron produced in United Kingdom ...	...
Basutoland, Minerals ...	...
Bauxite, Output of :		
United Kingdom ...	10, 16, 17, 38, 141, 174	
France ...	...
United States ...	...
Bavaria, Mineral output ...	403	
Persons employed ...	...
Bechuanaland Protectorate, Minerals ...	...
Bedfordshire, Chalk ...	160	
" Clay ...	160	
" Fuller's earth ...	...
" Gravel and sand ...	160	
" Limestone ...	161	
" Phosphate of lime ...	161	
" Sandstone ...	161	
Persons employed ...	61, 64	
Belfast and County Down Railway, Coal and Coke traffic		
Belfast and Northern Counties Railway, Coal and Coke traffic		

	Page.
Belgium, Accidents ...	304, 305, 375
" Mineral output ...	303, 373, 374
" Persons employed ...	302, 371, 372
" Decline of female labour at Mines ...	372
Bellite, Accidents with ...	82, 101
Berkshire, Chalk ...	160, 176
" Chert and flint ...	160, 177
" Clay ...	160, 178
" Gravel and sand ...	160, 213
" Limestone ...	161, 253
" Sandstone ...	161, 268
" Persons employed ...	61, 64, 161
Berwick, Igneous rocks ...	162, 216
" Sandstone ...	163, 268
" Persons employed ...	65, 163
Bickford's Patent Safety Lighters, Accidents with ...	76
Billiton, Output of Tin ...	384
" Persons employed ...	384
Birmingham Canal Navigation's Coal and Coke traffic ...	193
Bismuth or Bismuth ore, Output of :	
Austria ...	362
German Empire ...	397
Hungary ...	368
New South Wales ...	341
Queensland ...	346
Saxony ...	409
Bituminous shale, Output of :	
France ...	391
Italy ...	418
Black tin (<i>see</i> Tin ore).	
Blasting, Fatal accidents in Quarries ...	26, 27, 97, 99-101
Blast furnaces, Particulars of ...	230-235
" in operation from 1873 to 1900 ...	235
Blasting gelatine, Accidents with ...	82
Bluestone, Output of Queensland ...	346
Bog ore, Output of Ireland ...	10, 20, 21, 141, 175, 308
Bohemia, Accidents ...	367
" Persons employed ...	367
Boiler explosions at Mines ...	22, 23, 28-31, 87, 88, 91, 92
" Quarries ...	26, 27, 32, 33, 98
Bolivia, Mineral output ...	303, 376
Bonaire, Salt workings ...	387
Boracite, Output of :	
German Empire ...	397
Prussia ...	405
Turkey ...	449
Borate of calcium, Output of Chili ...	379
Borax, Output of :	
Chili ...	379
Peru ...	428
United States ...	455
Boric acid, Output of Italy ...	418
Borneo (Dutch), Mineral output ...	384, 385
(<i>see also</i> British North Borneo).	
Bosnia and Herzegovina, Accidents ...	304, 305, 370
" Mineral output ...	303, 370
" Persons employed ...	302, 370
Brazil, Mineral output ...	303, 376
Breconshire, Clay ...	162, 178
" Coal ...	162, 183, 184, 186
" Gravel and sand ...	162, 213
" Iron ore ...	162, 219, 220
" Lead ore ...	242
" Limestone ...	163, 253
" Sandstone ...	163, 268
" Slate ...	163, 272
" Death rate from accidents ...	93
" Persons employed ...	56, 62, 65, 93, 163
Bridgewater Canals, Coal traffic ...	193
Briquettes, Production of, in Hungary ...	368
British Borneo, Output of Minerals ...	303, 311
British Central Africa Protectorate, Gold ...	312
British Columbia, Accidents ...	303, 304, 317, 318
" Mineral output ...	317
" Persons employed ...	317
British Guiana, Accidents ...	304, 305, 313
" Mineral output ...	303, 312, 313
" Persons employed ...	302, 312
British New Guinea, Mineral output ...	303, 313
" Persons employed ...	302
British Solomon Islands, Copper ...	314
Broken Hill Lead Mines (New South Wales), Cases of	
lead poisoning ...	342
Bromine, Production of the United States ...	455
Brown coal (<i>see also</i> Lignite), Output of :	
Algeria ...	357
Austria ...	362
Bavaria ...	403
Bosnia and Herzegovina ...	370
Bulgaria ...	378
France ...	391
German Empire ...	397, 399
Hungary ...	368

	Page.
Brown coal (<i>see also</i> Lignite), Output of— <i>cont.</i>	
Italy ...	418
Prussia ...	405
Russia ...	436
Saxony ...	409
Servia ...	439
Spain ...	441
Brown iron ore, Output of :	
United Kingdom ...	217, 222
United States ...	457
Buckinghamshire, Chalk ...	160, 176
" Clay ...	160, 178
" Gravel and sand ...	160, 213
" Limestone ...	161, 253
" Persons employed ...	61, 64, 161
Bulgaria, Mineral output ...	303, 378
Bull-dog powder ...	76
Burnt cupreous pyrites treated at Metal Extraction	
Works ...	240
Metals extracted from ...	240
Bute, Gravel and sand ...	162, 213
" Igneous rocks ...	162, 216
" Sandstone ...	163, 268
" Persons employed ...	65, 163
C.	
CAITHNESS, Sandstone ...	163, 268
" Slate ...	163, 272
" Persons employed ...	65, 163
Caledonian Canal, Coal and coke carried ...	194
Railway ...	191
"Cabook," Output of Ceylon ...	325
Calcium carbide, Output of Ontario ...	319
Calc spar, Output of United Kingdom ...	17, 253, 254
Cambridgeshire, Chalk ...	160, 176
" Clay ...	160, 178
" Gravel and sand ...	160, 213
" Limestone ...	161, 253
" Phosphate of lime ...	161, 261
" Persons employed ...	64, 161
Canada, Accidents ...	304, 305, 317-320
" Mineral output ...	303, 316-320
" Persons employed ...	302, 317-320
(<i>see also</i> British Columbia, Nova Scotia, and Ontario).	
Canal, Coal and coke traffic ...	190-194
Canary Islands, Minerals worked ...	378
Cape Colony, Accidents ...	304, 305, 322-324
" Mineral output ...	303, 322
" Persons employed ...	302, 321
Carbo-gelatine, Accidents with ...	82
Carbonite, Accidents with ...	82
Cardigan, Clay ...	162, 178
" Copper ore ...	162, 201, 202
" Gravel and sand ...	162, 213
" Lead ore ...	163, 242, 244
" Sandstone ...	163, 268
" Silver ...	242, 244
" Slate ...	163, 272
" Zinc ore ...	163, 285, 286
" Persons employed ...	62, 65, 163
Carlow Co., Igneous rocks ...	164, 216
" Limestone ...	165, 254
" Persons employed ...	66, 165
Carmarthenshire, Chert and flint ...	162, 177
" Clay ...	162, 178
" Coal ...	162, 183, 184, 186
" Gravel and sand ...	162, 213
" Lead ore ...	163, 242, 244
" Limestone ...	163, 253
" Sandstone ...	163, 268
" Silver ...	242, 244
" Slate ...	163, 272
" Zinc ore ...	163, 285, 287
" Blast furnaces ...	228, 234
" Copper smelters ...	208
" Death rate from accidents ...	93
" Persons employed ...	56, 62, 65, 93, 163
Carnarvonshire, Clay ...	162, 178
" Copper ore ...	162, 201, 202
" Gravel and sand ...	162, 213
" Igneous rocks ...	162, 215

	Page.
Carnarvonshire, Iron ore	162, 219, 221, 223
" Lead ore	163, 242, 244
" Limestone	163, 253
" Manganese ore	162, 255
" Sandstone	163, 268
" Silver	242, 244
" Slate	163, 272, 273
" Zinc ore	163, 285, 287
" Persons employed	59, 62, 65, 163
Cavan Co., Limestone	165, 254
" Persons employed	66, 165
Celebes, Gold	385
Celestine (<i>see</i> Strontium sulphate).	
Cement, Output of :	
Bavaria	403
Canada	316
France	391
Ontario	319
Switzerland	447
United States	455
Certificates of competency, List of persons to whom granted in 1900	126-134
Certificates of Service, do., do.	134
Ceylon, Accidents	304, 305, 326
Mineral output	303, 325
Persons employed	302, 325
Chalk, Output of United Kingdom 10, 38, 141, 176, 308	
" Belgium	374
" Denmark	383
" France	391
Chalk Quarries, Fatal accidents	96, 97
Persons employed	63
Channel Islands, Persons employed	302, 326
Quantity of Stone exported	326
Chert and flint, Output of United Kingdom 10, 38, 141, 177, 308	
Cheshire, Clay	160, 178
Coal	160, 182, 186
Gravel and sand	160, 213
Limestone	161, 253
Salt	161, 265
Sandstone	161, 268
Coal conveyed by rail	190, 191
Copper smelters	208
Death rate from accidents	93
Persons employed	56, 61, 64, 93, 161
Zinc smelters	291
Cheshire Lines Railway, Salt conveyed	266
Chili, Mineral output	303, 379, 380
Persons employed	302, 379
China, Mineral wealth	303, 380, 381
China clay and stone conveyed by rail and sea	179
Output of Cornwall and Devon	19, 178
" Belgium	374
" France	391
" Russia	436
" Spain	441
Christmas Island, Phosphate of lime	326
Chrome iron, Production in United Kingdom	229
Chromic iron ore, Output of :	
Bosnia and Herzegovina	370
Canada	316
Greece	411
New Caledonia	425
Newfoundland	339
New South Wales	341
New Zealand	344
Norway	426
Quebec	320
Russia	436
Turkey	450
United States	455
Clackmannan, Clay	162, 178
Coal	162, 183, 186
Igneous rocks	162, 216
Sandstone	163, 268
Persons employed	56, 65, 163
Clare Co., Gravel and sand	164, 214
Igneous rocks	164, 216
Sandstone	165, 269
Persons employed	66, 165
Clay, Output of United Kingdom 10, 38, 141, 177-179, 308	
Production of :	
Algeria	357
Belgium	374
Chili	379
France	391
India	332-335
Spain	441
United States	455
Victoria	353
Exports from United Kingdom	180, 181
Quarries, Fatal accidents	96, 97
Persons employed	63

	Page.
Cleveland iron ore, Output of	218
Coal, Output of United Kingdom 10, 38, 139-141, 181-187, 303, 308	
" in each Coal-field	184, 185
" County 144, 146, 152, 154, 160, 162, 164, 182, 183, 186	
Output of :	
Algeria	303, 357
Annam	303, 411
Austria	303, 362
Bavaria	403
Belgium	303, 374
Borneo, Dutch	384
Bosnia and Herzegovina	303, 370
British Columbia	317
British Borneo	303, 311
Bulgaria	303, 378
Canada	303, 316
Cape Colony	303, 322
Chili	303, 379
Dutch East Indies	303, 385, 386
France	303, 391
German Empire	303, 397, 399
Holland	303, 412
Hungary	303, 368
Illinois	453, 456
India	303, 332-335
Indo-China	303, 414, 415
Italy	303, 413
Japan	303, 421
Java	385
Mexico	303, 423
Natal	303, 338
Newfoundland	303, 339
New South Wales	303, 341
New Zealand	303, 344
Nova Scotia	318
Ohio	456
Pennsylvania	453, 456
Peru	303, 428
Portugal	431
Prussia	405
Queensland	303, 346
Roumania	433
Russia	436
Sarawak	311
Saxony	409
Servia	303, 439
Spain	303, 441
Sumatra	386
Sweden	303, 445
Switzerland	303
Tasmania	303, 351
Tong-King	303, 414, 415
Turkey	303, 450
United States	303, 455
Victoria	303, 353
Western Australia	303, 355
West Virginia	456
Output per person employed	184, 185
exported from United Kingdom ... 140, 187, 198-200	
imported into	197
Average price in the several Coal-fields	185
" in the several Counties	182, 183, 186
" in the London market	188, 189
" at the Pit's mouth	182, 183, 185, 189
" at the several Ports	189
Quantity retained for home consumption	187
" per head of population	187
shipped coastwise	195, 196, 200
for use of steamers	187
and coke conveyed by railway, canal, &c.	190-194
used in the blast furnaces of United Kingdom 228, 230-235	
Coal-fields of United Kingdom, List of	53
Fatal accidents	90-92
Mineral output	184, 185
Persons employed	54, 55, 185
Coal-cutting Machines :	
Number in use in the United Kingdom	111
" United States	452
Quantity of Coal obtained in United Kingdom by use of	111
Quantity of Coal obtained in United States by use of	451
Coal-dust (<i>see</i> Accidents).	
Coal mines, definition	51
Fatal accidents	72, 75
Mineral output from	184, 185
Persons employed at	53, 54, 56, 57
Regulation Act	5
Cobalt and Nickel ores, Output of :	
United Kingdom	39, 200
Chili	379
German Empire	397

	Page.
Cobalt and Nickel ores, Output of— <i>cont.</i>	
Italy	418
New Caledonia	425
New South Wales	341
Norway	426
Prussia	405
Russia	437
Saxony	409
Sweden	445
United States	455
Cochin China, Output of jet	414
Coke exported from United Kingdom	187, 198-200
" shipped coastwise	195, 196, 200
" Output of:	
British Columbia	317
Canada	316
New South Wales	341
New Zealand	344
Nova Scotia	318
Colombia, Mineral output	303, 382
Colorado, Accidents	457
" Persons employed	454
" Coal cutting machines	452
Comparative tables, 1873-1900, Persons employed,	
Mineral output, Deaths from Accidents and Death	
Rates	36-43
Conglomerate, output of Belgium	374
Congo Free State	382
Copper exported	204-206
" extracted from Burnt Cupreous pyrites	240
" imported	207, 208
" obtained from British ores 141, 201, 202, 208, 303, 309	
" " Foreign ores	208
" Price in the London market	203, 204
" Smelters in United Kingdom	208, 209
Copper or Copper ore, Output of:	
United Kingdom 10, 16, 17, 38, 141, 201-203, 208, 303	
Argentina Republic	303, 358
Austria	303, 362
Bolivia	303, 376
Bosnia and Herzegovina	303, 370
British Columbia	317
Canada	316
Cape Colony	303, 322
Chili	303, 379
Cyprus	303, 327
France	303, 391
German Empire	303, 397
Hungary	303, 368
India	303, 332, 335
Italy	303, 418
Japan	303, 421
Mexico	303, 423
New Caledonia	303, 425
Newfoundland	303, 339
New South Wales	303, 341
New Zealand	303, 344
Norway	303, 426
Nova Scotia	318
Ontario	319
Peru	303, 428
Portugal	431
Prussia	405
Quebec	320
Queensland	303, 346
Russia	303, 437
Servia	303, 439
South Australia	303, 349
Spain	303, 441
Sweden	303, 445
Tasmania	303, 351
Turkey	303, 450
United States	303, 456
Western Australia	303, 355
Copper precipitate, Production of:	
United Kingdom ... 10, 16, 17, 38, 141, 201-203, 308	
Portugal	431
Coprolites (<i>see Phosphate of lime</i>)	261
" conveyed by railway	262
Corea, Mineral wealth of	382
" Output of Gold	303, 382
" Persons employed	302, 382
Cork, Bandon and South Coast Railway coal and coke	
traffic	192
Cork Co., Barytes	164, 172, 173
" Clay	164, 179
" Copper ore	164, 201, 202
" Gravel and sand	164, 214
" Limestone	165, 254
" Sandstone	165, 269
" Slate	165, 272
" Persons employed	57, 62, 66, 165
Cornwall, Arsenic	161, 169, 170

	Page.
Cornwall, Arsenical pyrites	161, 168
" Chert and flint	160, 177
" China clay and stone	178
" Clay	160, 178
" Copper ore	160, 201, 202
" Gravel and sand	160, 213
" Igneous rocks	160, 215
" Limestone	161, 253
" Ochre	161, 257, 258
" Sandstone	161, 268
" Slate	161, 272, 273
" Tin ore	161, 277-279
" Uranium ore	161, 283
" Wolfram	161, 284
" Zinc ore	161, 285, 286
" Arsenic refiners	171
" Death-rate from accidents	93
" Tin smelters	283
" Persons employed	61, 64, 93, 161
Corundum, Output of:	
India	332, 334, 335
United States	455
Costa Rica, output of Gold	303, 382
County summaries, Output of Mines under the Coal	
Mines Act	144-147
" " Output of Mines under the Metalliferous	
Mines Act	148-151
" " Output of Quarries	152-157
" " Output of Shallow workings, Brine	
wells, &c.	158, 159
" " Output of all Mines, Quarries, &c.	160-165
" " Persons employed in Coal Mines	56, 57
" " " " Iron Mines	58-59
" " " " Other Mines	61, 62
" " Persons employed under the Coal	
Mines Act	145, 147
" " " employed under the Metalliferous	
Mines Act	149, 151
" " " employed under the Quarries	
Act	153, 155, 157
" " " employed under all three	
Acts	161, 163, 165
" " Death-rates	93
Crinan Canal coal and coke traffic	194
Crocidolite, Production of Cape Colony	322
Cryolite, Output of Greenland	383
Cuba, Mineral wealth	383
Cumberland, Clay	160, 178
" Coal	160, 182, 186
" Gravel and sand	160, 213
" Gypsum	160, 214
" Igneous rocks	160, 215
" Iron ore	160, 218, 219, 221, 222
" Lead ore	161, 242, 243
" Limestone	161, 253
" Sandstone	161, 268
" Silver	242, 243
" Slate	161, 272, 273
" Zinc ore	161, 285, 286
" Blast furnaces	228, 230
" Coal conveyed by rail	190, 191
" Death-rate from accidents	93
" Persons employed	56, 58, 61, 64, 93, 161
" Zinc smelters	291
Cupreous iron pyrites, Output of:	
Canada	316
Italy	418
Norway	426
Portugal	431
Saxony	409
Spain	441
Cupreous iron pyrites, imported	239
" " " treated at the Metal Extraction	
Works	240
Curaçao, Minerals worked	387
Cyprus, Mineral output	303, 327

D.

DEATHS from Accidents at Mines in United Kingdom	9, 23, 25, 40, 41, 66-93, 118, 119, 304, 309
" " at Quarries in United	
Kingdom 9, 27, 94-103, 304, 309	
" " (<i>see also under "Accidents"</i>).	

	Page.		Page.
Carnarvonshire, Iron ore	162, 219, 221, 223	Cleveland iron ore, Output of	218
" Lead ore	163, 242, 244	Coal, Output of United Kingdom 10, 38, 139-141, 181-187,	303, 308
" Limestone	163, 253	" " in each Coal-field	184, 185
" Manganese ore	162, 255	" " County 144, 146, 152, 154, 160, 162, 164,	182, 183, 186
" Sandstone	163, 268	" Output of :	
" Silver	242, 244	Algeria	303, 357
" Slate	163, 272, 273	Annam	303, 414
" Zinc ore	163, 285, 287	Austria	303, 362
" Persons employed	59, 62, 65, 163	Bavaria	403
Cavan Co., Limestone	165, 254	Belgium	303, 374
" Persons employed	66, 165	Borneo, Dutch	384
Celebes, Gold	385	Bosnia and Herzegovina	303, 370
Celestine (<i>see</i> Strontium sulphate).		British Columbia	317
Cement, Output of :		British Borneo	303, 311
Bavaria	403	Bulgaria	303, 378
Canada	316	Canada	303, 316
France	391	Cape Colony	303, 322
Ontario	319	Chili	303, 379
Switzerland	447	Dutch East Indies	303, 385, 386
United States	455	France	303, 391
Certificates of competency, List of persons to whom		German Empire	303, 397, 399
granted in 1900	126-134	Holland	303, 412
Certificates of Service, do., do.	134	Hungary	303, 368
Ceylon, Accidents	304, 305, 326	Illinois	453, 456
" Mineral output	303, 325	India	303, 332-335
" Persons employed	302, 325	Indo-China	303, 414, 415
Chalk, Output of United Kingdom 10, 38, 141, 176, 308		Italy	303, 413
" Belgium	374	Japan	303, 421
" Denmark	383	Java	385
" France	391	Mexico	303, 423
Chalk Quarries, Fatal accidents	96, 97	Natal	303, 338
" Persons employed	63	Newfoundland	303, 339
Channel Islands, Persons employed	302, 326	New South Wales	303, 341
" Quantity of Stone exported	326	New Zealand	303, 344
Chert and flint, Output of United Kingdom 10, 38, 141,		Nova Scotia	318
177, 308		Ohio	456
Cheshire, Clay	160, 178	Pennsylvania	453, 456
" Coal	160, 182, 186	Peru	303, 428
" Gravel and sand	160, 213	Portugal	431
" Limestone	161, 253	Prussia	405
" Salt	161, 265	Queensland	303, 346
" Sandstone	161, 268	Roumania	433
" Coal conveyed by rail	190, 191	Russia	436
" Copper smelters	208	Sarawak	311
" Death rate from accidents	93	Saxony	409
" Persons employed	56, 61, 64, 93, 161	Servia	303, 439
" Zinc smelters	291	Spain	303, 441
Cheshire Lines Railway, Salt conveyed	266	Sumatra	386
Chili, Mineral output	303, 379, 380	Sweden	303, 445
" Persons employed	302, 379	Switzerland	303
China, Mineral wealth	303, 380, 381	Tasmania	303, 351
China clay and stone conveyed by rail and sea	179	Tong-King	303, 414, 415
" Output of Cornwall and Devon	19, 178	Turkey	303, 450
" Belgium	374	United States	303, 453
" France	391	Victoria	303, 353
" Russia	436	Western Australia	303, 355
" Spain	441	West Virginia	456
Christmas Island, Phosphate of lime	326	" Output per person employed	184, 185
Chrome iron, Production in United Kingdom	229	" exported from United Kingdom ... 140, 187, 198-200	
Chromic iron ore, Output of :		" imported into	197
Bosnia and Herzegovina	370	" Average price in the several Coal-fields	183
Canada	316	" " in the several Counties ... 182, 183, 186	
Greece	411	" " in the London market	188, 189
New Caledonia	425	" " at the Pit's mouth ... 182, 183, 185, 189	
Newfoundland	339	" " at the several Ports	189
New South Wales	341	" Quantity retained for home consumption	187
New Zealand	344	" " per head of population	187
Norway	426	" shipped coastwise	195, 196, 200
Quebec	320	" for use of steamers	187
Russia	436	" and coke conveyed by railway, canal, &c. ... 190-194	
Turkey	450	" used in the blast furnaces of United Kingdom ... 228,	
United States	455	230-235	
Clackmannan, Clay	162, 178	Coal-fields of United Kingdom, List of	53
" Coal	162, 183, 186	" Fatal accidents	90-92
" Igneous rocks	162, 216	" Mineral output	184, 185
" Sandstone	163, 268	" Persons employed	54, 55, 185
" Persons employed	56, 65, 163	Coal-cutting Machines :	
Clare Co., Gravel and sand	164, 214	Number in use in the United Kingdom	111
" Igneous rocks	164, 216	" " United States	452
" Sandstone	165, 269	Quantity of Coal obtained in United Kingdom by	
" Persons employed	66, 165	use of	111
Clay, Output of United Kingdom ... 10, 38, 141, 177-179, 308		Quantity of Coal obtained in United States by use of ... 451	
" Production of :		Coal-dust (<i>see</i> Accidents).	
Algeria	357	Coal mines, definition	51
Belgium	374	" Fatal accidents	72, 75
Chili	379	" Mineral output from	184, 185
France	391	" Persons employed at	53, 54, 56, 57
India	332-335	" Regulation Act	5
Spain	441	Cobalt and Nickel ores, Output of :	
United States	455	United Kingdom	39, 200
Victoria	353	Chili	379
Exports from United Kingdom	180, 181	German Empire	397
" Quarries, Fatal accidents	96, 97		
" " Persons employed	63		

	Page.
Cobalt and Nickel ores, Output of— <i>cont.</i>	
Italy ...	418
New Caledonia ...	425
New South Wales ...	341
Norway ...	426
Prussia ...	405
Russia ...	437
Saxony ...	409
Sweden ...	445
United States ...	455
Cochin China, Output of jet ...	414
Coke exported from United Kingdom ...	187, 198-200
" shipped coastwise ...	195, 196, 200
" Output of :	
British Columbia ...	317
Canada ...	316
New South Wales ...	341
New Zealand ...	344
Nova Scotia ...	318
Colombia, Mineral output ...	303, 382
Colorado, Accidents ...	457
" Persons employed ...	454
" Coal cutting machines ...	452
Comparative tables, 1873-1900, Persons employed,	
Mineral output, Deaths from Accidents and Death	
Rates ...	36-43
Conglomerate, output of Belgium ...	374
Congo Free State ...	382
Copper exported ...	204-206
" extracted from Burnt Cupreous pyrites ...	240
" imported ...	207, 208
" obtained from British ores 141, 201, 202, 208, 303, 309	
" " Foreign ores ...	208
" Price in the London market ...	203, 204
" Smelters in United Kingdom ...	208, 209
Copper or Copper ore, Output of :	
United Kingdom 10, 16, 17, 38, 141, 201-203, 208, 303	
Argentina Republic ...	303, 358
Austria ...	303, 362
Bolivia ...	303, 376
Bosnia and Herzegovina ...	303, 370
British Columbia ...	317
Canada ...	316
Cape Colony ...	303, 322
Chili ...	303, 379
Cyprus ...	303, 327
France ...	303, 391
German Empire ...	303, 397
Hungary ...	303, 368
India ...	303, 332, 335
Italy ...	303, 418
Japan ...	303, 421
Mexico ...	303, 423
New Caledonia ...	303, 425
Newfoundland ...	303, 339
New South Wales ...	303, 341
New Zealand ...	303, 344
Norway ...	303, 426
Nova Scotia ...	318
Ontario ...	319
Peru ...	303, 428
Portugal ...	431
Prussia ...	405
Quebec ...	320
Queensland ...	303, 346
Russia ...	303, 437
Servia ...	303, 439
South Australia ...	303, 349
Spain ...	303, 441
Sweden ...	303, 445
Tasmania ...	303, 351
Turkey ...	303, 450
United States ...	303, 456
Western Australia ...	303, 355
Copper precipitate, Production of :	
United Kingdom 10, 16, 17, 38, 141, 201-203, 308	
Portugal ...	431
Coprolites (<i>see Phosphate of lime</i>) ...	261
" conveyed by railway ...	262
Corea, Mineral wealth of ...	382
" Output of Gold ...	303, 382
" Persons employed ...	302, 382
Cork, Bandon and South Coast Railway coal and coke	
traffic ...	192
Cork Co., Barytes ...	164, 172, 173
" Clay ...	164, 179
" Copper ore ...	164, 201, 202
" Gravel and sand ...	164, 214
" Limestone ...	165, 254
" Sandstone ...	165, 269
" Slate ...	165, 272
" Persons employed ...	57, 62, 66, 165
Cornwall, Arsenic ...	161, 169, 170

	Page.
Cornwall, Arsenical pyrites ...	161, 168
" Chert and flint ...	160, 177
" China clay and stone ...	178
" Clay ...	160, 178
" Copper ore ...	160, 201, 202
" Gravel and sand ...	160, 213
" Igneous rocks ...	160, 215
" Limestone ...	161, 253
" Ochre ...	161, 257, 258
" Sandstone ...	161, 268
" Slate ...	161, 272, 273
" Tin ore ...	161, 277-279
" Uranium ore ...	161, 283
" Wolfram ...	161, 284
" Zinc ore ...	161, 285, 286
" Arsenic refiners ...	171
" Death-rate from accidents ...	93
" Tin smelters ...	283
" Persons employed ...	61, 64, 93, 161
Corundum, Output of :	
India ...	332, 334, 335
United States ...	455
Costa Rica, output of Gold ...	303, 382
County summaries, Output of Mines under the Coal	
Mines Act ...	144-147
" " Output of Mines under the Metalli-	
ferous Mines Act ...	148-151
" " Output of Quarries ...	152-157
" " Output of Shallow workings, Brine	
wells, &c. ...	158, 159
" " Output of all Mines, Quarries, &c.	
" " " " " " " " " " " "	160-165
" " Persons employed in Coal Mines 56, 57	
" " " " " " " " " " " "	58-59
" " " " " " " " " " " "	61, 62
" " Persons employed under the Coal	
Mines Act ...	145, 147
" " " " " " " " " " " "	149, 151
" " " " " " " " " " " "	153, 155, 157
" " " " " " " " " " " "	161, 163, 165
" " " " " " " " " " " "	93
Grinan Canal coal and coke traffic ...	194
Crocidolite, Production of Cape Colony ...	322
Cryolite, Output of Greenland ...	333
Cuba, Mineral wealth ...	333
Cumberland, Clay ...	160, 178
" Coal ...	160, 182, 186
" Gravel and sand ...	160, 213
" Gypsum ...	160, 214
" Igneous rocks ...	160, 215
" Iron ore ...	160, 218, 219, 221, 222
" Lead ore ...	161, 242, 243
" Limestone ...	161, 253
" Sandstone ...	161, 268
" Silver ...	242, 243
" Slate ...	161, 272, 273
" Zinc ore ...	161, 285, 286
" Blast furnaces ...	228, 230
" Coal conveyed by rail ...	190, 191
" Death-rate from accidents ...	93
" Persons employed ...	56, 58, 61, 64, 93, 161
" Zinc smelters ...	291
Cupreous iron pyrites, Output of :	
Canada ...	316
Italy ...	418
Norway ...	426
Portugal ...	431
Saxony ...	409
Spain ...	441
Cupreous iron pyrites, imported ...	239
" " " " " " " " " " " "	
" " " " " " " " " " " "	240
Curaçao, Minerals worked ...	387
Cyprus, Mineral output ...	303, 327

D.

DEATHS from Accidents at Mines in United Kingdom	9, 23, 25, 40, 41, 66-93, 118, 119, 304, 309
" " " " " " " " " " " "	
" " " " " " " " " " " "	at Quarries in United
" " " " " " " " " " " "	Kingdom 9, 27, 94-103, 304, 309
" " " " " " " " " " " "	(<i>see also under "Accidents"</i>).

	Page.
Death-rates in each inspection-district ...	34
" in the several Coal-fields ...	90, 92
" in the principal Mining Counties ...	93
" in all Mines per 1000 persons employed	
from 1891-1900 ...	68
" 1851-1900 ...	69, 120, 121
per million tons of mineral raised ...	42, 70
Mines under the Coal Mines Act ...	34, 42
" Metalliferous Mines Act ...	34, 43, 70
Quarries under the Quarries Act ...	34
" in different kinds of Quarries ...	96
" from different causes of accidents :	
at Coal Mines ...	34
at Quarries ...	34
" from accidents at Mines :	
United Kingdom ...	9, 34, 68, 69, 305, 309
Algeria ...	305, 358
Austria ...	305, 364, 365, 367
Belgium ...	305, 375
Bohemia ...	367
Bosnia and Herzegovina ...	305, 370
British Columbia ...	305, 318
British Guiana ...	305, 313
Cape Colony (Kimberley Diamond	
Mines) ...	305, 323
Ceylon ...	305, 326
Federated Malay States ...	305, 329
France ...	305, 393
German Empire ...	305, 400, 401
Gold Coast ...	330
Greece ...	305, 411
Holland ...	305, 413
Hungary ...	305, 369
India ...	305, 386, 387
Italy ...	305, 418, 419
Japan ...	305, 422
Kimberley ...	305, 323
Mexico ...	305, 424
Natal ...	305, 333
Newfoundland ...	305, 339
New South Wales ...	305, 342
New Zealand ...	305, 344
Nova Scotia ...	305, 319
Ontario ...	305, 320
Portugal ...	305, 431
Prussia ...	407
Queensland ...	305, 347
Russia ...	437
Saxony ...	410
Spain ...	305, 442
Sweden ...	305, 445
Switzerland ...	305, 448
Tasmania ...	305, 351
United States ...	305, 457
Victoria ...	305, 354
Western Australia ...	305, 355
" from accidents at Petroleum Wells :	
Austria ...	364
" from accidents at Quarries :	
United Kingdom ...	34, 94-96
Algeria ...	305, 358
Ceylon ...	326
France ...	305, 393
Germany ...	305, 402
Italy ...	305, 420
Portugal ...	431
Switzerland ...	305, 448
Denmark, Mineral output ...	383
Denbighshire, Clay ...	162, 178
" Coal ...	162, 183, 186
" Gravel and sand ...	162, 213
" Igneous rocks ...	162, 215
" Iron ore ...	162, 219, 220
" Lead ore ...	163, 242, 245
" Limestone ...	163, 253
" Sandstone ...	163, 268
" Silver ...	242, 245
" Slate ...	163, 272, 273
" Zinc ore ...	163, 285, 287
" Blast furnaces ...	228, 234
" Death-rate from accidents ...	93
" Persons employed ...	56, 62, 65, 93, 163
" Zinc smelters ...	291
Derbyshire, Barytes ...	160, 171, 172
" Chert and flint ...	160, 177
" Clay ...	160, 178
" Coal ...	160, 182, 186
" Fluorspar ...	161, 210
" Gravel and sand ...	160, 213
" Gypsum ...	160, 214
" Iron ore ...	160, 219, 220
" Iron pyrites ...	160, 238
" Lead ore ...	161, 242, 243, 246
" Limestone ...	161, 253

	Page.
Derbyshire, Manganese ore ...	161, 255
" Ochre ...	161, 257, 258
" Sandstone ...	161, 268
" Wolfram ...	161
" Zinc ore ...	161, 285, 286
" Blast furnaces ...	228, 230
" Coal conveyed by rail ...	190, 191
" Death-rate from accidents ...	93
" Lead smelters ...	251
" Persons employed ...	56, 61, 64, 93, 161
Desilverizers in the United Kingdom ...	251, 252
Detonators, Accidents with ...	82
Devonshire, Arsenic ...	161, 169, 170
" Arsenical pyrites ...	161, 168, 169
" Barytes ...	160, 171
" Chert and flint ...	160, 177
" Clay ...	160, 178
" Copper ore ...	160, 201, 202
" Gravel and sand ...	160, 213
" Igneous rocks ...	160, 215
" Iron ore ...	160, 219, 221, 222
" Limestone ...	161, 253
" Ochre ...	161, 257
" Sandstone ...	161, 268
" Slate ...	161, 272
" Tin ore ...	161, 277, 278
" Wolfram ...	161, 284
" Arsenic refiners ...	171
" Persons employed ...	58, 61, 64, 161
Diagram, Number of Persons employed at Mines of the	
United Kingdom, 1851-1900 ...	32
" Number of Persons employed and Number of	
Deaths from Accidents from all causes at	
Mines, 1851-1900 ...	67
" Average quinquennial Death-rates from acci-	
dents at Mines, 1851-1900 ...	69
" Annual Death-rates from Accidents per 1,000	
persons employed at Mines, 1851-1900 ...	69
" Deaths per 1,000,000 tons of mineral raised,	
1851-1900 ...	70
" Death-rates from Accidents underground,	
1873-1900 ...	71
" Proportion of deaths from different classes	
of Accidents, 1851-1900 ...	74
" Death-rates from Accidents caused by Ex-	
plosions of fire-damp or coal dust, 1851-	
1900 ...	77
" Death-rates from Accidents from falls of	
ground, 1851-1900 ...	78
" Death-rates from Shaft Accidents, 1851-1900	
" Death-rates from Miscellaneous underground	
Accidents, 1851-1900 ...	86
" Death-rates from Accidents on surface,	
1851-1900 ...	89
" Death-rates from Accidents at Quarries and at	
Mines, 1896-1900 ...	95
" Output and Export of Coal, 1873-1900 ...	181
" Output and Import of Iron ore, 1873-1900 ...	218
" Prices of Coal, Copper, Iron, Lead, Tin, and	
Zinc, 1873-1900 ...	292
Diamonds, Output of :	
Borneo, Dutch ...	385
Brazil ...	377
Cape Colony ...	322
India ...	332, 335
New South Wales ...	341
Orange River Colony ...	345
Western Australia ...	355
District statistics of persons employed, Output and	
accidents ...	6-8
Districts, Mines inspection, List of ...	44, 45
Dolcoath Mine, Remarks on yield of Tin ...	112, 277
Donegal Co., Bog ore ...	165
" Igneous rocks ...	164, 216
" Limestone ...	165, 254
" Sandstone ...	165, 269
" Persons employed ...	62, 66, 165
Dorsetshire, Chalk ...	160, 176
" Clay ...	160, 178
" Gravel and sand ...	160, 213
" Limestone ...	161, 253
" Persons employed ...	61, 64, 161
Down Co., Gravel and sand ...	164, 214
" Igneous rocks ...	164, 216
" Lead ore ...	242
" Limestone ...	165, 254
" Sandstone ...	165, 269
" Persons employed ...	62, 66, 165
Dublin Co., Clay ...	164, 179
" Gravel and sand ...	164, 214
" Igneous rocks ...	164, 216
" Limestone ...	165, 254
" Sandstone ...	165, 269
" Persons employed ...	66, 165

	Page.		Page.
Flags, Output of—cont.		German Empire, Accidents...	304, 305, 400-402
Canada	316	" " Mineral output ...	303, 397-400
France	391	" " Persons employed ...	302, 396, 397
Quebec	320	Glamorganshire, Clay ...	162, 178
Tunis	449	" Coal	162, 183, 184, 186
Flint and chert, Output of :		" Gravel and sand ...	162, 213
United Kingdom	10, 38, 141, 177	" Iron ore	162, 219, 220
Belgium	374	" Limestone	163, 253
France	392	" Sandstone	163, 268
United States	455	" Arsenic refiners ...	171
Flintshire, Chert and flint ...	162, 177	" Blast furnaces	223, 234
" Clay	162, 178	" Copper smelters ...	209
" Coal	162, 183, 186	" Death rate from Accidents ...	93
" Gravel and sand	162, 213	" Lead smelters	251
" Iron ore	162, 219, 221, 223	" Persons employed ...	56, 62, 65, 93, 163
" Lead ore	163, 242, 245	" Tin smelters	283
" Limestone	163, 253	" Zinc smelters	291
" Oil shale	163, 259	Glasgow and South Western Railway, Coal carried ...	191
" Sandstone	163, 268	Gloucester and Berkeley Canal Coal traffic ...	193
" Silver	242, 245	Gloucestershire, Clay ...	160, 178
" Zinc ore	163, 285, 287	" Coal	160, 182, 186
" Blast furnaces	228, 234	" Gravel and sand ...	160, 213
" Death-rate from Accidents ...	93	" Iron ore	160, 219, 221, 223
" Lead smelters	251	" Limestone	161, 253
" Persons employed	56, 59, 62, 65, 93, 163	" Oolite	161, 257, 258
Fluor spar, Output of :		" Sandstone	161, 268
United Kingdom	10, 38, 141, 210, 211, 308	" Strontium sulphate ...	161, 276
Bavaria	403	" Coal conveyed by rail ...	190, 191
France	391	" Copper smelters ...	209
Saxony	409	" Death rate from Accidents ...	93
Spain	441	" Lead smelters	251
United States	455	" Persons employed ...	56, 58, 61, 64, 93, 161
Forfar, Clay	162, 178	" Tin smelters	283
" Gravel and sand	162, 213	" Zinc smelters	291
" Igneous rocks	162, 216	Gold bullion and specie exported and imported ...	212
" Sandstone	163, 269	" extracted from foreign cupreous pyrites ...	212, 240
" Persons employed	65, 163	" ore, Imported	213
Formosa, Mineral wealth ...	388	Gold or Gold quartz, Output of :	
Forth and Clyde Canal Coal and Coke traffic ...	194	United Kingdom 10, 16, 17, 38, 141, 211, 212, 303, 308, 309	
Fossil fuel, Production of Italy ...	418	Abyssinia	303, 356
France, Accidents	304, 392, 393	Argentine Republic ...	303, 358
" Mineral output	303, 391, 392	Austria	303, 362
" Persons employed	302, 390	Bolivia	303, 376
French Guiana, Mineral output ...	303, 393	Brazil	303, 377
French Soudan, Mineral output ...	394	British Borneo	303, 311
Fuller's earth, Output of :		British Columbia ...	317
United Kingdom (<i>see</i> Clay) ...	178	British Columbia ...	303, 312, 313
France	391	British Guiana	303, 313
United States	455	British New Guinea ...	303, 316
Furnaces, Blast, in United Kingdom, particulars of, 230-235		Canada	303, 316
Furness Railway, Coal and coke carried by ...	190	Cape Colony	303, 322
		Chile	303, 380
		China	303, 381
		Colombia	303, 382
		Corea	303, 382
		Costa Rica	303, 383
		Dutch Borneo	303, 385
		Dutch East Indies ...	303, 385, 386
		Dutch Guiana	303, 386
		Ecuador	303, 387
		Federated Malay States ...	303, 328
		France	303, 391
		French Guiana	303, 393
		French Soudan	303, 394
		German Empire	303, 398, 400
		Gold Coast	303, 330
		Honduras	303, 414
		Hungary	303, 368
		India	303, 332, 334, 335
		Italy	303, 418
		Ivory Coast	303, 420
		Japan	303, 421
		Madagascar	303, 422
		Mexico	303, 423
		Natal	303, 338
		New South Wales	303, 341
		New Zealand	303, 344
		Nicaragua	303, 425
		Norway	303, 426
		Nova Scotia	303, 318
		Ontario	303, 319
		Peru	303, 428
		Portugal	303, 431
		Prussia	303, 405
		Quebec	303, 320
		Queensland	303, 346
		Rhodesia	303, 348
		Russia	303, 437
		Sarawak	303, 311
		Senegal	303, 438
		South Australia	303, 349
		Spain	303, 441
		Tasmania	303, 351
		Transvaal	303, 351
		United States	303, 456

G.

GALENA (<i>see</i> Lead ore) ...	241
Galway Co., Igneous rocks ...	164, 216
" Limestone	165, 254
" Sandstone	165, 269
" Persons employed	66, 165
Ganister (<i>see</i> Sandstone) ...	268
Garnet, Output of German East Africa ...	394
" India	332, 335
" United States	455
Gas, Carburetted hydrogen, Output of Italy ...	418
Gelatine-dynamite, Accidents with ...	82
Gelignite, Accidents with ...	82, 101
Gelignite and gunpowder, Accidents with ...	82
General remarks :	
Appeals	112
Coal cutting machinery	111
Cornwall and Devon	112
Explosives in Coal Mines Order ...	108
Legislation	112-117
North Wales	112
Safety lamps	108-110
Ventilation	110
Winding by electricity	111
Wire-saw	112
General Summary of the Mineral Output of :	
United Kingdom for 1899 and 1900 ...	10, 141
British Empire " " ...	303
Foreign countries " " ...	303
German East Africa, Mineral deposits ...	394
German West Africa, Minerals found in ...	410

	Page.
Gold or Gold quartz, Output of—cont.	
Uruguay	303, 458
Venezuela	303, 459
Victoria	303, 353
Western Australia	303, 355
Gold Coast, Quantity of Gold exported	330
" Accidents	329
" Persons employed	329
Gold Mining in North Wales	112
Grand Canal Coal traffic	194
Granite, Output of :	
United Kingdom (<i>included with Igneous rocks</i>)	
Bavaria	403
British Guiana	312
Canada	316
Ceylon	325
India	332-335
Newfoundland	339
Queensland	346
Graphite, Output of :	
Austria	362
Bavaria	403
Canada	316
Ceylon	325
German Empire	397
India	332, 334, 335
Italy	418
Japan	421
Mexico	423
Ontario	319
Peru	428
Quebec	320
Sweden	445
United States	455
Gravel and sand, Output of :	
United Kingdom	10, 38, 141, 213, 214, 308
Algeria	357
Belgium	374
Canada	316
France	392
India	332-335
Legal decision as to being Minerals	112
Great Central Railway, Coal and Coke carried	190
Great Eastern Railway, Coprolites conveyed	262
Great Northern Railway, Coal carried	190
" " " Coprolites conveyed	262
" " " of Ireland, Coal and Coke	192
Great Southern and Western Railway Coal and Coke traffic	192
Great Western Railway, Coal and Coke carried	190
Greece, Accidents	304, 305, 411
" Mineral output	303, 411
" Persons employed	302, 411
Greenland, Output of Cryolite	383
" Persons employed	302, 383
Grindstones, Output of :	
Canada	316
Ceylon	325
United States	455
Guano, Output of :	
Chili	380
Guatemala, Minerals obtained	412
Gum, Kauri, Production of New Zealand	344
Gun-flints, Production of United Kingdom	177
Gunpowder, Accidents with	82, 101
Gypsum, Output of :	
United Kingdom	10, 38, 141, 214, 215, 308
Algeria	357
Bavaria	404
Canada	316
Cyprus	327
France	392
Greece	411
India	332, 335
Mexico	423
Nova Scotia	318
Ontario	319
Switzerland	447
United States	455

H.

	Page.
HADDINGTON, Clay	162, 178
" Coal	162, 183, 186
" Igneous rocks	162, 216
" Limestone	163, 254
" Sandstone	163, 269
" Persons employed	56, 65, 163
Hall, Henry, Remarks on the use of electric lamps for sinking purposes	75
" " Remarks on the liability of danger from explosives which have passed the "Special Test."	76
" " Remarks on haulage roads	65
Hampshire, Chalk	160, 176
" Chert and flint	160, 177
" Clay	160, 178
" Gravel and sand	160, 213
" Sandstone	161, 268
" Persons employed	64, 161
Haulage, Underground Accidents	22, 23, 28-31, 82, 84-86, 91, 92
Haydock Colliery Explosion	67, 75
Hayti, Mineral wealth	412
Hedley, J. L. Remarks on the custom of "cavilling"	85
Hematite iron, Production of the blast furnaces	229
Herefordshire, Clay	160, 178
" Gravel and sand	160, 213
" Igneous rocks	160, 216
" Limestone	161, 258
" Sandstone	161, 268
" Persons employed	64, 161
" Coal conveyed by rail	191
Hertfordshire, Chalk	160, 176
" Chert and flint	160, 177
" Clay	160, 178
" Gravel and sand	160, 213
" Persons employed	61, 64, 161
Holland, Accidents	304, 305, 413
" Mineral output	303, 413
" Persons employed	302, 412, 413
Honduras, Mineral output	414
Honestones, Production of Belgium	374
Hungary, Accidents	304, 305, 369
" Mineral output	303, 369
" Persons employed	302, 369
Huntingdonshire, Clay	160, 178
" Persons employed	64, 161

I.

ICELAND, Minerals	383
Igneous rocks, Output of United Kingdom 10, 38, 141, 216, 308	
" Quarries, Accidents	96, 97
" Persons employed	63
Illinois, Accidents in Coal Mines	453, 457
" Output of Coal	453, 456
" Persons employed	454
" Coal-cutting machines	452
Imports of Coal	197
" Copper and copper ore	207, 208
" Gold and gold ore	212
" Iron ore	225-227
" Iron pyrites	239
" Lead and lead ore	249, 250
" Manganese ore	256
" Petroleum	261
" Phosphate of lime	262
" Quicksilver	263

	Page.
Imports of Silver bullion and specie	270
" Silver ore	270
" Tin and tin ore	281
" Zinc and zinc ore	288
Inclined and engine planes, Accidents 22, 23, 28-33, 82, 91, 92, 102, 103	
India, Accidents	304, 305, 336, 337
" Mineral output	303, 332-335
" Persons employed	302, 331
Indo-China, Mineral output	303, 414, 415
Indiana, Accidents in Coal Mines	457
" Persons employed	454
" Coal-cutting machines	452
Indian Territory, Accidents in Coal Mines	457
" Persons employed	454
" Coal-cutting machines	452
Infusorial earth, Output of United States	455
" Victoria	353
Inspection districts for Mines and Quarries	44, 45
Inspectors of Mines, List of	44, 45
Inverness, Sandstone	163, 269
" Persons employed	65, 163
Iodine, Production of Chili	380
" Java	385
Iowa, Accidents in Coal Mines	457
" Persons employed	454
" Coal-cutting machines	452
Ireland, Summary of Mineral output	143
(See also under each County.)	
" Lead smelters	252
Irish Coal-fields, Counties	53
" Fatal accidents	90-92
" Output of Mineral	184, 185
" Persons employed	54, 55
Iron or Iron ore, Output of :	
United Kingdom 10, 39, 141, 217-224, 303, 308, 309	
Alabama	457
Algeria	303, 357
Austria	303, 362
Bavaria	404
Belgium	303, 374
Bosnia and Herzegovina	303, 370
Canada	303, 316
Cuba	303, 383
France	303, 391
German Empire	303, 397, 400
Greece	303, 411
Hungary	303, 368
India	303, 332-335
Italy	303, 418
Japan	303, 421
Luxemburg	303, 398
Mexico	423
Michigan	457
Minnesota	457
Newfoundland	303, 339
New South Wales	341
Norway	303, 426
Nova Scotia	318
Ontario	319
Portugal	431
Prussia	405
Quebec	320
Russia	303, 437
Saxony	409
Spain	303, 441
Sweden	303, 455
Switzerland	303
Tasmania	303, 351
United States	303, 456, 457
Western Australia	303, 355
Iron ore, Exported	226, 227
" Imported	225-227
" Diagram showing output and import, 1873-1900	218
" Fatal Accidents at Iron Mines	72
" Output from Coal Mines	218, 219
" " Mines under the Coal Mines Act 10, 14, 15, 146, 220	
" " Metalliferous Mines Act 16, 17, 150, 221-223	
" " Iron Mines	10, 218, 219
" " Quarries	10, 18, 19, 217-219, 224
" " Open workings	20, 21, 158, 224
" " in each County	160, 162, 164, 219
" " from the several Coal-fields	184
" Persons employed at Iron Mines	57-59
" Quantity available for the blast furnaces	227
" smelted in United Kingdom 228, 230-235	
" Quarries, Accidents	96, 97
" Persons employed	63
Iron oxide, Production of New South Wales	341

	Page.
Iron, Pig, Exported	236-238
" " Prices per ton in different districts	236, 237
" " Output of the blast furnaces	238-236
" " Quantity available for home consumption	236
" " obtainable from British ores 141, 217, 303, 309	
Iron pyrites, Imported	239
" Countries whence exported	240
" Output of :	
United Kingdom 10, 39, 141, 238, 239	
Bavaria	464
Belgium	374
Bosnia and Herzegovina	370
Canada	316
France	391
German Empire	397
Hungary	368
Italy	418
Japan	421
Newfoundland	339
Norway	424
Portugal	431
Prussia	405
Russia	437
Saxony	409
Spain	442
Sweden	445
United States	455
Iron vitriol, Production of :	
Austria	362
German Empire	398
Hungary	368
Japan	421
Prussia	405
Irruptions of water, Accidents 22, 23, 29, 82, 84, 91, 92	
Isle of Man, Clay	164, 179
" Gravel and sand	164, 214
" Igneous rocks	164, 216
" Lead ore	165, 242, 245
" Limestone	165, 254
" Sandstone	165, 269
" Silver	242-245
" Slate	165, 272
" Zinc ore	165, 285, 287
" Summary of the Mineral output	143
" Persons employed	60, 62, 66, 165
Isle of Wight (included with Hampshire).	
Italy, Accidents	304, 305, 418-420
" Mineral output	303, 417, 418
" Persons employed	302, 418, 417
Ivory Coast, Mineral wealth	420

J.

JADE, Production of India	332, 334
Japan, Accidents	304, 305, 422
" Mineral output	303, 421
" Persons employed	302, 421
Java, Mineral output	335
Jet, Output of :	
United Kingdom	241
Cochin China	414
Spain	442
Johore, Mineral deposits	422

K.

KAINITE, Output of :	
German Empire	397
Prussia	405
Kansas, Accidents at Coal Mines	457
" Persons employed	464
" Coal-cutting machines	452

	Page.
Kauri gum, Production of New Zealand ...	344
Kent, Chalk ...	160, 176
" Chert and flint ...	160, 177
" Clay ...	160, 178
" Gravel and sand ...	160, 213
" Limestone ...	161, 253
" Sandstone ...	161, 268
" Persons employed ...	56, 61, 64, 161
Kentucky, Accidents at Coal Mines ...	457
" Persons employed ...	454
" Coal-cutting machines ...	452
Kerry Co., Limestone ...	165, 254
" Slate ...	165, 272
" Persons employed ...	66, 165
Kildare Co., Limestone ...	165, 254
" Persons employed ...	66, 165
Kilkenny Co., Coal ...	164, 183, 186
" Limestone ...	165, 254
" Sandstone ...	165, 269
" Slate ...	165, 272
" Persons employed ...	57, 66, 165
Kimberley Diamond Mines, Accidents at ...	304, 322-324
" Persons employed at ...	321, 322
Kincardine, Igneous rocks ...	162, 216
" Sandstone ...	163, 269
" Persons employed ...	65, 163
King's County, Bog ore ...	165
" Gravel and sand ...	164, 214
" Limestone ...	165, 254
" Persons employed ...	66, 165
Kinross, Clay ...	162, 178
" Coal ...	162, 183, 186
" Igneous rocks ...	162, 216
" Persons employed ...	56, 65, 163
Kirkcubright, Igneous rocks ...	162, 216
" Persons employed ...	65, 163

L.

LABUAN, Output of coal ...	311
Lanarkshire, Clay ...	162, 178
" Coal ...	162, 183, 186
" Gravel and sand ...	162, 213
" Igneous rocks ...	162, 216
" Iron ore ...	162, 219, 220
" Lead ore ...	163, 242, 245
" Limestone ...	163, 254
" Oil shale ...	163, 259
" Sandstone ...	163, 269
" Silver ...	242-245
" Blast furnaces ...	228, 235
" Coal conveyed by rail ...	191
" Death rate from accidents... ..	93
" Persons employed ...	56, 62, 65, 93, 163
" Zinc smelters ...	291
Lancashire, Clay ...	160, 178
" Coal ...	160, 182, 186
" Copper ore ...	160, 201, 202
" Gravel and sand ...	160, 213
" Igneous rocks ...	160, 215
" Iron ore ...	160, 218, 219, 221, 223
" Iron pyrites ...	160, 238
" Limestone ...	161, 253
" Salt ...	161, 265
" Sandstone ...	161, 268
" Slate ...	161, 272, 273
" Blast furnaces ...	228, 231
" Coal conveyed by rail ...	190, 191
" Copper smelters ...	209
" Death rate from accidents ...	93
" Lead smelters ...	251
" Persons employed ...	56, 58, 61, 64, 93, 161
" Zinc smelters ...	291
Lancashire and Cheshire Coal-fields, Counties ...	53
" Fatal Accidents ...	90-92
" Output of Mineral ...	184, 185
" Persons employed ...	54, 55
Lancashire and Yorkshire Railway, Coal and Coke carried ...	190
Laterite, Output of India ...	332-335

	Page.
Lead obtainable from British ores 141, 242-246, 250, 303, 309	
" imported foreign ores ...	250
" Prices of, in the London market ...	246, 247
" Quantity available for home consumption ...	250
" Smelters in United Kingdom ...	251, 252
Lead and lead ore, Exported ...	247-250
" Imported ...	249, 250
Lead and lead ore, Output of:	
United Kingdom 10, 39, 141, 241-246, 303, 308, 309	
Algeria ...	303, 357
Austria ...	303, 362
Belgium ...	303, 374
Bolivia ...	303, 376
British Columbia ...	317
Canada ...	303, 316
Chili ...	303, 380
France ...	303, 391
German Empire ...	303, 397
Greece ...	303, 411
Hungary ...	303, 368
Italy ...	303, 418
Japan ...	303, 421
Mexico ...	303, 423
New South Wales ...	303, 341
Peru ...	303, 428
Portugal ...	431
Prussia ...	405
Quebec ...	320
Queensland ...	303, 346
Russia ...	303, 437
Servia ...	303, 439
South Australia ...	303, 349
Spain ...	303, 442
Sweden ...	303, 445
Tasmania ...	303, 351
Tunis ...	303, 449
United States ...	303, 456
Western Australia ...	303, 355
Lead poisoning cases at Broken Hill Mines (New South Wales) ...	342
Leeds and Liverpool Canal Co. Coal traffic ...	193
Leeward Islands (<i>see</i> Redonda and Sombbrero).	
Legislation relating to Mines in:	
United Kingdom (1800-1900) ...	112-117
Austria ...	360
Guatemala ...	412
Natal ...	537
New South Wales ...	341
New Zealand ...	343
Nova Scotia ...	318
Tasmania ...	350
Leicestershire, Clay ...	160, 178
" Coal ...	160, 182, 186
" Gravel and sand ...	160, 213
" Igneous rocks ...	160, 215
" Iron ore ...	160, 219, 224
" Limestone ...	161, 253
" Slate ...	161, 272
" Blast furnaces ...	228, 231
" Coal conveyed by rail ...	190, 191
" Death rate from Accidents ...	93
" Persons employed ...	56, 61, 64, 93, 161
Leitrim Co., Coal ...	164, 183, 186
" Sandstone ...	165, 269
" Persons employed ...	57, 66, 165
Lignite (<i>see also</i> Brown coal), Output of:	
United Kingdom ...	252
Bulgaria ...	378
France ...	392
Greece ...	411
Portugal ...	431
Roumania ...	435
Russia ...	436
Servia ...	439
Limerick Co., Igneous rocks ...	164, 216
" Gravel and sand ...	164, 214
" Limestone ...	165, 254
" Sandstone ...	165, 269
" Persons employed ...	66, 165
Lime or limestone:	
Output of United Kingdom 10, 39, 141, 253, 254, 308	
Algeria ...	357
Bavaria ...	404
Belgium ...	374
Canada ...	316
Chili ...	380
France ...	391, 392
India ...	332-335
Malta ...	337
New South Wales ...	341
Nova Scotia ...	318
Ontario ...	319
Queensland ...	346
Saxony ...	409

	Page.
Lime or Limestone—cont.	
Switzerland	447
Tunis	449
United States	455
Western Australia	355
Limestone Quarries, Accidents	96, 97
Persons employed	63
Lincolnshire, Chalk	160, 176
Clay	160, 178
Gravel and sand	160, 213
Iron ore	160, 218-220, 224
Limestone	161, 253
Sandstone	161, 268
Blast furnaces	228, 231
Coal conveyed by rail	190
Persons employed	58, 64, 161
Linlithgowshire, Clay	162, 178
Coal	162, 183, 186
Gravel and sand	162, 213
Igneous rocks	162, 216
Iron ore	162, 219, 220
Limestone	163, 254
Oil shale	163, 259
Sandstone	163, 269
Coal conveyed by rail	191
Death rate from Accidents	93
Persons employed	56, 62, 65, 93, 163
Lithographic stone, Output of :	
Bavaria	404
France	392
London and North Western Railway, Coal carried	190
Coprolites conveyed	262
Salt conveyed	266
Londonderry Co., Igneous rocks	164, 216
Limestone	165, 254
Sandstone	165, 269
Persons employed	66, 165
Longford Co., Gravel and sand	164, 214
Limestone	165, 254
Persons employed	66, 165
Louth Co., Gravel and sand	164, 214
Igneous rocks	164, 216
Limestone	165, 254
Persons employed	66, 165
Luxemburg (G. Duchy) Mineral output... ..	303, 398, 422
Persons employed	302, 396

M

MACHINERY, COAL mined in the United States by	451
Machinery, Accidents by, at Mines	22-25, 28-31, 80, 82, 86, 87, 91, 92
Quarries	26, 27, 32, 33, 98, 102, 103
Remarks by Dr. Foster	102
Madagascar, Mineral wealth of	303, 422
Magnesite, Production of :	
Greece	411
India	332, 334
United States	455
Magnesium carbonate, Output of France... ..	392
chloride, Production of :	
German Empire	398
Prussia	406
salts, Production of :	
German Empire	397
Prussia	405
sulphate, Production of :	
German Empire	398
Prussia	406
Malay States (<i>see</i> Federated Malay States).	
Malta, Limestone exported from	337
Manchester Ship Canal Co., Salt conveyed	266
Manganese ore, Imported	256
Output of :	
United Kingdom	10, 16, 17, 39, 141, 255, 308
Austria	362
Belgium	374
Bosnia and Herzegovina	370
Brazil	377
Canada	316

	Page.
Manganese ore, output of—cont.	
Chili	380
Colombia	382
Dutch East Indies	386
France	391
German Empire	398
Greece	411
Hungary	368
India	332, 334
Italy	418
Japan	421
Java	385
New South Wales	341
New Zealand	344
Nova Scotia	318
Portugal	431
Prussia	405
Queensland	346
Russia	437
Saxony... ..	409
South Australia	349
Spain	442
Sweden	445
Turkey... ..	450
United States... ..	455
Manjak, Output of Barbados	310
Map of British Isles, shewing Inspection districts	46, 47
Marble, Output of :	
Algeria	357
Belgium	374
France	392
Italy	416
Mexico	423
Tunis	449
Turkey	459
Marl, Output of :	
United Kingdom (<i>included with "Clay"</i>)... ..	403
Bavaria	403
Belgium	374
France	392
United States	455
Martin, J. S., Remarks on the principal mines of Devon, Cornwall, &c.	112
Explosives used in his District	83
Maryland, Accidents at Coal Mines	467
Persons employed	454
Coal-cutting machines... ..	452
Maryport and Carlisle Railway Coal and Coke traffic	191
Matagnite gelatine, accidents with... ..	82
Matches or smoking, Explosions of fire-damp caused by	75
Mayo Co., Bog ore	163
Limestone	165, 254
Persons employed	66, 165
Meath Co., Gravel and sand	164, 214
Igneous rocks	164, 216
Limestone	165, 254
Persons employed	66, 165
Mechanical Coal-cutters, number in use in United Kingdom, and coal got by	111
United States	451, 452
Meerschaum, Output of Turkey	459
Melaphyre, Output of Bavaria	404
Mercury (<i>see</i> Quicksilver).	
Merionethshire, Clay... ..	162, 178
Copper ore... ..	162, 201, 202
Gold	163, 211
Igneous rocks	162, 215
Limestone	163, 253
Manganese ore	163, 253
Sandstone	163, 268
Slate	163, 272, 274
Death rate from accidents	93
Persons employed	62, 65, 93, 163
Mexico, Accidents	304, 305, 424
Mineral output	303, 423
Persons employed	302, 423
Mica, Output of :	
United Kingdom	10, 19, 141, 256, 308
Canada	316
Ceylon	325
India	332-335
Newfoundland	339
Ontario	319
Quebec	320
Saxony	409
South Australia... ..	349
United States	455
Western Australia	355
Michigan, Accidents at Ore Mines... ..	459
Middlesex, Chalk	16, 176
Chert and flint	160, 177
Clay	160, 178
Gravel and sand	160, 213

	Page.		Page.
Middlesex, Persons employed in	64, 161	Naphtha (<i>see Petroleum</i>)	
" Lead smelters	251	Natal, Accidents	304, 305, 338
Midland coal-fields, Counties	53	" Mineral output	303, 338
" Fatal accidents	90-92	" Persons employed	302, 337
" Output of Minerals	184, 185	" Legislation	337
" Persons employed	54, 55	Natural gas, Output of :	
Midland Great Western Railway Coal and Coke traffic	192	Canada	316
Midland Railway Coal and Coke traffic	191	Ontario	319
" Coprolites conveyed	262	United States	455
Millstones, Output of :		Negri Sembilan, Output of Tin	328
Belgium	374	" Wolfram exported	328
France	392	New Caledonia, Mineral output	303, 425
Greece	411	" Persons employed	302, 424
Servia	439	Newfoundland, Accidents	304, 339
United States	455	" Mineral output of	303, 339
Mineral oil (<i>see Petroleum</i>)		" Persons employed	302, 338
Mineral output of the several Coal-fields	184, 185	New Guinea (<i>see British New Guinea</i>)	
" " per person employed	185	New Mexico, Accidents at Coal Mines	457
Mineral output of :		" Persons employed	454
United Kingdom, summary	10, 141-143	" Coal-cutting machines	452
British Empire, summary	303, 308	New South Wales, Accidents	304, 305, 342
Foreign Countries, summary	303	" Mineral output	303, 341
Mines in each county	144-151	" Persons employed	302, 340
Quarries in each county	152-157	" Legislation	341
Shallow workings, &c., in each county	158-159	" Report of Royal Commission on Vessels carrying coal	341
Mineral output, County summary, all Mines, Quarries, &c.	160-165	New Zealand, Accidents	304, 305, 344
Mineral paints, Output of United States	455	" Mineral output	303, 344
Mineral waters, Output of :		" Persons employed	302, 344
Canada	316	" Legislation	343
Italy	418	Nicaragua, Output of Gold	303, 425
Spain	442	Nickel or nickel ore, Output of :	
United States	455	United Kingdom	39, 200, 257
Mine, Definition of	5	Canada	316
Mines and Quarries, Inspection districts	44, 45	German Empire	397
Miscellaneous fatal accidents at Mines 22-25, 40, 41, 81, 82, 87, 89		Italy	418
" " Quarries 26, 27, 98, 99, 102, 103		New Caledonia	425
" " non-fatal accidents at Mines	28-31	Ontario	319
" " Quarries	32, 33	Prussia	405
Missouri, Accidents at Coal Mines	457	Saxony	409
" Persons employed	454	United States	456
" Coal-cutting machines	452	Nigeria, Mineral wealth	345
Molybdenite, Output of Queensland	346	Nitrate of soda, Output of Chili	380
Monaghan Co., Gravel and sand	164, 214	Non-fatal accidents at Mines in United Kingdom Quarries	28-31 32, 33
" Limestone	165, 254	Norfolk, Chalk	160, 176
" Persons employed	66, 165	" Chert and flint	160, 177
Monazite, Output of :		" Clay	160, 178
Brazil	377	" Gravel and sand	160, 213
United States	455	" Limestone	161, 253
Monkland Canal Coal and Coke traffic	194	" Sandstone	161, 268
Monmouthshire, Clay	160, 178	" Persons employed	64, 161
" Coal	160, 182, 186	Northamptonshire, Clay	160, 178
" Iron ore	160, 219, 220	" Gravel and sand	160, 213
" Limestone	161, 253	" Iron ore	160, 218, 219, 224
" Sandstone	161, 268	" Limestone	161, 253
" Blast furnaces	228, 231	" Sandstone	161, 268
" Coal conveyed by rail	190, 191	" Blast furnaces	228, 231
" Death rate from accidents	93	" Persons employed	61, 64, 161
" Persons employed	56, 64, 93, 161	North Borneo, Mineral deposits	311
Montana, Accidents at Coal Mines	457	North British Railway, Coal and Coke traffic	192
" Persons employed	454	North Eastern Railway, Coal and Coke traffic	191
" Coal-cutting machines	452	Northern Coal-field, Counties	53
Montgomeryshire, Barytes	162, 172, 173	" Fatal accidents	90-92
" Clay	162, 178	" Output of Mineral	184, 185
" Copper ore	201	" Persons employed	54, 55
" Igneous rocks	162, 215	North Staffordshire Railway, Coal and Coke traffic	191
" Lead ore	163, 242, 245	" Salt conveyed	266, 267
" Limestone	163, 253	Northumberland, Barytes	160, 171, 172
" Sandstone	163, 268	" Clay	160, 178
" Silver	242, 245	" Coal	160, 182, 186
" Slate	163, 272, 275	" Gravel and sand	160, 213
" Zinc ore	163, 285, 287	" Igneous rocks	160, 215
" Persons employed	62, 65, 163	" Lead ore	161, 242, 243
Morocco, Mineral workings of	424	" Limestone	161, 253
		" Sandstone	161, 268
		" Silver	242, 243
		" Zinc ore	161, 285, 286
		" Coal conveyed by rail	191
		" Copper smelters	209
		" Death rate from accidents	93
		" Lead smelters	251
		" Persons employed	56, 61, 64, 93, 161
		North Wales Coal-field, Counties	53
		" Fatal accidents	90-92
		" Output of Mineral	184, 185
		" Persons employed	54, 55
		Norway, Mineral output	303, 426
		" Persons employed	302, 426
		Nottinghamshire, Clay	160, 178
		" Coal	160, 182, 186
		" Gravel and sand	160, 213
		" Gypsum	160, 214
		" Iron ore	160, 219, 224
NAIRN, Igneous rocks	162, 216		
" Sandstone	163, 269		
" Persons employed	65, 163		
Naked lights, Explosions of fire-damp caused by	75, 76		

N.

	Page.
Nottinghamshire, Iron pyrites	160, 238
" " Limestone	161, 253
" " Sandstone	161, 268
" " Blast furnaces	228, 232
" " Coal conveyed by rail	190, 191
" " Copper smelters	209
" " Death-rate from accidents	93
" " Persons employed	56, 61, 64, 93, 161
Nova Scotia, Accidents	304, 319
" " Mineral output	318
" " Persons employed	318
" " Legislation	318

O.

OCHRE AND UMBER, Output of :	
United Kingdom	10, 39, 141, 257-259, 308
Bavaria	404
Belgium	374
Canada	316
Cyprus	327
France	392
Quebec	320
Saxony	409
Spain	442
Ohio, Accidents at Coal Mines	457
" " Persons employed	454
" " Coal-cutting machines	452
Oil shale, Output of :	
United Kingdom	10, 14, 15, 39, 141, 259, 260, 308
New South Wales	341
Oil stones, Output of United States	455
Onyx, Output of :	
Algeria	357
France	392
Ontario, Accidents	304, 305, 320
" " Mineral output	319
" " Persons employed	319
Opal, Output of :	
New South Wales	341
Queensland	346
Orange River Colony, Output of Diamonds	345
Orkney, Sandstone	163, 269
" " Persons employed	65, 163
Output of Minerals from Mines in each inspection district under the Coal Mines Act	
Do. Do. per Person employed	14, 15
Output of Minerals from Mines in each inspection district under the Metalliferous Mines Act	
Output of Minerals from Quarries in each inspection district under the Quarries Act	16, 17
Output of Minerals from certain shallow workings	20, 21
Output of Minerals from each county under the Coal Mines Act	
Output of Minerals from each county under the Metalliferous Mines Act	144-147
Output of Minerals from each county under the Metalliferous Mines Act	148-151
Output of Minerals from each county under the Quarries Act	
Output of Minerals from shallow workings, brine wells, &c.	152-157
Output of Minerals from the several Coal-fields	
" " from Mines, 1873 to 1900	184, 185
" " from Mines and Quarries, 1873 to 1900	37
" " in United Kingdom, General Summary	38, 39
" " in British Colonies	10, 141
" " in Foreign Countries	303
" " (see also under each Colony and Country, and under each Mineral).	303
Overwinding, Accidents from	22, 28, 79, 80, 91, 92
Oxfordshire, Chalk	160, 176
" " Chert and flint	160, 177
" " Clay	160, 178
" " Gravel and sand	160, 213
" " Iron ore	160, 219, 224
" " Limestone	161, 253
" " Sandstone	161, 268
" " Persons employed	61, 64, 161
Ozokerite, Output of Austria	363

P.

	Page.
PAHANG, Mineral output	328
Paraguay, Mineral deposits of	427
Patent fuel, Exported	187, 198-200
" " Shipped coastwise	195, 196, 200
Paving stone, Output of :	
Bavaria	404
Belgium	374
France	391, 392
Peat, Output of :	
France	391
Holland	417
Italy	418
Peebles, Coal	162, 183, 186
" " Igneous rocks	162, 216
" " Limestone	163, 234
" " Sandstone	163, 269
" " Persons employed	56, 65, 163
Pembroke, Coal and anthracite	162, 183, 184, 186
" " Igneous rocks	162, 216
" " Limestone	163, 233
" " Sandstone	163, 268
" " Slate	163, 273
" " Persons employed	56, 65, 163
Pennsylvania, Accidents	457
" " Output of Coal	456
" " Persons employed	454
" " Coal-cutting machines	452
Perak, Mineral output	325
Persia, Minerals obtained in	427
Persons employed in inspection districts under the Coal Mines Act	
Persons employed in inspection districts under the Metalliferous Mines Act	11
Persons employed in inspection districts under the Quarries Act	12
Persons employed in each county under the Coal Mines Act	13
Persons employed in each county under the Metalliferous Mines Act	145, 147
Persons employed in each county under the Metalliferous Mines Act	149, 151
Persons employed in each county under the Quarries Act	64-66, 153, 155, 157
Persons employed in the several Coal-fields	
" " at Coal Mines	54, 55, 90, 185
" " Iron Mines	53, 54, 56, 57
" " "other" Mines	53, 57-59
" " different kinds of Quarries	53, 59-62
" " Mines, 1873 to 1900	36
" " 1851 to 1900	52, 118, 119
" " Mines and Quarries in United Kingdom, Summary	9, 165, 302, 307
" " Mines and Quarries in British Colonies, Summary of	302
Persons employed at Mines and Quarries in Foreign Countries, Summary of	
Persons employed in Mining in :	302
Algeria	302, 336
Austria	302, 341, 363
Bahamas	302, 310
Banca	384
Barbados	302
Bavaria	403
Belgium	302, 371, 372
Billiton	384
Bohemia	367
Bosnia and Herzegovina	302, 370
British Columbia	302, 317
British Guiana	302, 312
British New Guinea	302
Canada	302, 317-320
Cape Colony	302, 321
Ceylon	302, 325
Channel Islands	302, 326
Chili	302, 379
Corea	302, 382
Dutch East Indies	302, 384, 385
Federated Malay States	302, 327
France	302, 390
German Empire	302, 396, 397
Gold Coast	329

	Page.
Persons employed in Mining in—cont.	
Greece ...	302, 411
Greenland ...	302, 383
Holland ...	302, 412, 413
Hungary ...	302, 368
India ...	302, 331
Italy ...	302, 416, 417
Japan ...	302, 421
Kimberley ...	321, 322
Luxemburg ...	302, 396
Mexico ...	302, 423
Natal ...	302, 337
New Caledonia ...	302, 424
Newfoundland ...	302, 338
New South Wales ...	302, 340
New Zealand ...	302, 343
Norway ...	302, 426
Nova Scotia ...	318
Ontario ...	319
Peru ...	302, 427
Portugal ...	302, 430
Prussia ...	404
Quebec ...	320
Queensland ...	302, 346
Redonda ...	302, 347
Russia ...	302, 435, 436
Saxony ...	409
Servia ...	302, 438
Siam ...	302, 439
Singkep ...	396
South Australia ...	302, 349
Spain ...	302, 440, 441
Sumatra ...	386
Sweden ...	302, 444
Switzerland ...	302, 446, 447
Tasmania ...	302, 350
United States ...	302, 454
Victoria ...	302, 353
Western Australia ...	302, 354
Persons employed at Petroleum Wells :	
Austria ...	362
Russia ...	46
Persons employed at Quarries :	
Algeria ...	356
Belgium ...	371
British Guiana ...	312
Ceylon ...	325
Channel Islands ...	326
France ...	390
Italy ...	416
Newfoundland ...	338
Peru ...	427
Portugal ...	430
Sweden ...	302, 444
Switzerland ...	446, 447
Persons employed at Salt Works :	
Austria ...	361
Bosnia and Herzegovina ...	370
German Empire ...	397
Italy ...	416
Russia ...	436
Persons employed at Turbaries :	
Holland ...	412
Italy ...	416
Wethshire, Gravel and sand ...	162, 213
" Igneous rocks ...	162, 216
" Limestone ...	163, 254
" Sandstone ...	163, 269
" Slate ...	163, 272
" Persons employed ...	56, 65, 163
Peru, Mineral output ...	303, 428
" Persons employed ...	302, 427
Petroleum, Imported ...	261
Petroleum, Output of :	
United Kingdom ...	10, 15, 141, 260, 308
Austria ...	303, 363
Bavaria ...	404
Canada ...	316
Dutch East Indies ...	303, 385, 386
German Empire ...	303, 397
Hungary ...	303, 368
India ...	303, 332-335
Italy ...	303, 418
Japan ...	303, 421
Ontario ...	319
Peru ...	303, 428
Prussia ...	405
Roumania ...	433
Russia ...	303, 437
Sumatra ...	386
United States ...	303, 455
Philippine Islands, Mineral deposits ...	429
Phosphate of alumina, Output of Redonda ...	347

	Page.
Phosphate of lime, Conveyed by railway...	262
" " Imported ...	262
" " Output of :	
United Kingdom ...	10, 19, 20, 21, 39, 141, 157, 158, 261, 262
Algeria ...	357
Aruba ...	387
Belgium ...	374
Canada ...	316
Chili ...	380
Christmas Island ...	326
Dutch West Indies ...	387
France ...	392
French Guiana ...	393
Norway ...	426
Quebec ...	320
Russia ...	437
Spain ...	442
Tunis ...	449
United States ...	455
Pig iron (see Iron, Pig).	
Platinum, Output of :	
Canada ...	316
Colombia ...	382
New South Wales ...	341
Russia ...	437
United States ...	456
Plumbago (see Graphite).	
Porcelain earth, Output of Bavaria ...	404
Porphry, Output of Queensland ...	346
Porto Rico, Mineral deposits ...	429
Portugal, Accidents ...	304, 431
" Mineral output ...	303, 431
" Persons employed ...	302, 430
Portuguese East Africa, Minerals ...	432
" Nyassaland, Minerals ...	432
Potassium, United Kingdom ...	263
Potassium salts, Output of :	
German Empire ...	397, 398
Prussia ...	405, 406
Potter's clay, Exported ...	180
" Output of :	
United Kingdom ...	178
France ...	391
Tunis ...	449
Pozzolana, Output of Switzerland ...	447
Precious stones, Output of :	
Cape Colony ...	322
Ceylon ...	325
France ...	391
India ...	332
Mexico ...	423
New South Wales ...	341
Queensland ...	346
Siam ...	439
United States ...	455
Prices of sea-borne Coal in the London market...	188, 189
" Coal at the pit's mouth ...	182, 183, 185, 189
" " at various shipping ports ...	189
" " Diagram showing fluctuations from 1878 to 1900 ...	292
" Pig iron at the works ...	236, 237
" Antimony in London market ...	167
" Copper ...	203, 204
" Lead ...	246, 247
" Standard silver ...	271
" Tin ...	280
" Zinc ...	290
" Cleveland Pig, Copper, Lead, Tin, and Zinc; Diagram showing fluctuations from 1873 to 1900...	292
Prosecutions under the Mines Act ...	104-106
" " Quarries Act ...	106
" " Factory and Workshop Acts ...	107
" " (see also Appeals) ...	112
Prussia, Accidents ...	406-408
" Mineral output ...	405, 406
" Persons employed ...	404
Pumice, Output of :	
Mexico ...	423
United States ...	455
Pyrites (see Arsenical pyrites, Cypper ore, and Iron pyrites).	

Q.

	Page.
QUARRIES, Death-rate from accidents ...	34, 94-96
" Fatal accidents ...	9, 26, 27, 94-103
(See also under Accidents.)	
" Fatal accidents at different kinds of ...	96, 97
" Non-fatal accidents ...	32, 33
" Suggestions for preventing accidents... ..	100, 103
" Number at work ...	13, 63
" Mineral output, summary of... ..	10
" " " in each county ...	152-157
" " " inspection district 18, 19	
" Persons employed, summary of ...	9, 63
" " " in each county 64-66, 153, 155,	157
" " " in each inspection district	13
" " " at different kinds of ...	63
" Rules of the German Quarriers' Association	100
Quarries, Output of :	
Algeria ...	357
Belgium ...	374
France ...	391, 392
Italy ...	418
Sweden ...	445
Switzerland ...	447
Quartz, Output of :	
Canada ...	316
Saxony ...	409
Quartzite (see Sandstone) ...	268
Quebec, Mineral output ...	320
" Persons employed ...	320
Queen's County, Clay ...	164, 179
" Coal ...	164, 183, 186
" Gravel and sand ...	164, 214
" Igneous rocks ...	164, 216
" Limestone... ..	165, 254
" Persons employed ...	57, 66, 165
Queensland, Accidents ...	304, 305, 347
" Mineral output ...	303, 346
" Persons employed ...	302, 346
Quicksilver, United Kingdom ...	263
" Exported ...	264
" Imported ...	263
Quicksilver ore, Output of :	
Austria ...	362
Hungary ...	368
Italy ...	418
Peru ...	428
Russia ...	437
Spain ...	442
United States ...	456
Victoria ...	353

R.

RADNORSHIRE, Igneous rocks ...	162, 215
" Limestone ...	163, 253
" Sandstone ...	163, 268
" Persons employed... ..	62, 65, 163
Railway traffic of Coal and coke ...	190-192
Railways and sidings, Accidents on, at Mines	22-25, 28-31, 87,
" " " Quarries	26, 27, 32, 33,
" " " "	89, 91, 92
" " " "	98, 102, 103
Redonda, Output of Phosphate of alumina ...	347
" Persons employed ...	302, 347
Red " oxide of iron, Output of Gloucestershire and	
Somerset ...	258
Regulus, Exported ...	206
" Imported ...	207, 208

Renfrewshire, Barytes ...	162, 172, 173
" Clay ...	162, 177
" Coal ...	162, 183, 186
" Gravel and sand ...	162, 213
" Igneous rocks ...	162, 216
" Iron ore ...	162, 219, 220
" Limestone ...	163, 254
" Oil shale ...	163, 259
" Sandstone ...	163, 260
" Coal conveyed by rail ...	191
" Persons employed ...	56, 59, 62, 65, 163
Rhodesia, Output of Gold ...	303, 348
Robson, J. T., Remarks on Haulage Accidents ...	83
Roburite, Accidents with ...	83
Rock salt, Carted inland ...	266
" Conveyed by railways, &c. ...	266
" Exported ...	267
" Output of United Kingdom ...	10, 16, 17, 265
Roofing slates and slate slabs, Exported ...	275, 276
" " " Output of United King-	
" " " dom ...	271-273
Ropes or chains breaking, Accidents from ...	22-29, 32,
" " " " 33, 80, 82, 91, 92, 96, 102	
Roscommon Co., Coal ...	164, 183, 186
" Sandstone... ..	165, 259
" Persons employed ...	57, 66, 165
Ross and Cromarty, Igneous rocks ...	162, 216
" Sandstone ...	163
" Persons employed ...	65, 163
Roumania, Mineral output ...	432, 433
Roxburgh, Igneous rocks ...	162, 216
" Limestone ...	163, 254
" Sandstone ...	163, 260
" Persons employed ...	65, 163
Rubies, Output of India ...	332, 334
Rules for preventing accidents from falls of	
ground ...	79, 100
Russia, Accidents ...	304, 437
" Mineral output ...	303, 436, 437
" Persons employed ...	302, 435, 436
Rutile (see Titanium).	
Rutland, Clay ...	160, 178
" Iron ore ...	160, 219, 224
" Limestone ...	161, 243
" Sandstone ...	161, 264
" Persons employed ...	61, 64, 161

S.

SABA, Sulphur deposits ...	387
Safety lamps, Accidents caused by ...	75
" in use in 1900 ...	108-110
St. David's Gold Mine, Remarks on ...	112
St. Martin, Salt workings ...	357
Sahara, Salt deposits ...	437
Salt, Exported ...	267
" Conveyed by railway, canal, &c. ...	266, 267
" Rock and white, Output of :	
United Kingdom ...	10, 16, 17, 20, 21, 39,
" " " "	141, 265, 303, 308
Abyssinia ...	303, 356
Aden ...	303, 310
Algeria ...	303, 357
Austria ...	303, 363
Bahamas ...	303, 310
Bavaria ...	404
Bonaire and St. Martin ...	387
Bosnia and Herzegovina ...	303, 370
Canada ...	303, 316
Cape Colony ...	303, 322
Ceylon ...	303, 325
Chili ...	303, 379
China ...	303, 381
Cyprus ...	303, 327
Dutch West Indies ...	303, 387
France ...	303, 391
German Empire ...	303, 397, 398, 399
Greece ...	303, 411
Honduras ...	414
Hungary ...	303, 368
India ...	303, 332, 334, 335
Italy ...	303, 418
Japan ...	303, 421

	Page.
Salt, Rock and white, Output of— <i>cont.</i>	
Mexico	303, 423
Ontario	319
Peru	303, 428
Prussia	405, 406
Roumania	303, 433
Russia	303, 437
South Australia	303, 349
Spain	303, 442
Switzerland	303, 447
Tunis	303, 449
Turkey	303, 450
Turks and Caicos Islands	303, 352
United States	303, 455
Venezuela	303, 459
Western Australia	303, 355
Saltpetre, Output of India	332-335
Sand and gravel, Output of :	
United Kingdom	10, 38, 141, 213, 214
Algeria	357
Bavaria	404
Belgium	374
Canada	316
France	392
Legal decision as to being Minerals	112
Sandstone, Output of :	
United Kingdom	10, 39, 141, 263, 269
Bavaria	404
India	332-335
Queensland	346
Sandstone Quarries, Accidents	96, 97
Persons employed	63
Sandwich Islands, Mineral Deposits	438
Sapphire, Output of Queensland	346
Sarawak, Mineral output	311
Saxony, Accidents	410
Mineral output	409
Persons employed	409
Scotch Coal-fields, Counties	53
Fatal Accidents	90-92
Output of minerals	184, 185
Persons employed	54, 55
Scotland, Summary of Mineral output	143
Copper smelters	209
Lead smelters	252
Railway traffic of Coal and coke	191, 192
Selangor, Mineral output	329
Selkirk, Igneous rocks	162, 216
Persons employed	65, 163
Senegal, Gold exported	438
Servia, Accidents	304
Mineral output	303, 439
Persons employed	302, 438
Severn Navigation Coal and Coke traffic	193
Shaft Accidents	22-25, 28-31, 40, 41, 68, 73, 79-81, 91, 92, 118, 119
Shale (<i>see</i> Oil shale).	
Shetland, Sandstone	163, 269
Persons employed	65, 163
Shipments of China clay, and stone	179, 180
Coal, coke, &c. coastwise	195, 196
Shot-firing, Accidents caused by, in Mines	75
Quarries	100
Shropshire, Barytes	160, 171, 173
Clay	160, 178
Coal	160, 182, 186
Gravel and sand	160, 213
Igneous rocks	160, 215
Iron ore	160, 219, 220
Iron pyrites	160, 238
Lead ore	161, 242, 243
Limestone	161, 253
Sandstone	161, 268
Zinc ore	161, 285, 286
Blast furnaces	228, 232
Coal conveyed by rail	190, 191
Death rate from accidents	93
Persons employed	56, 58, 61, 64, 93, 161
Shropshire Union Canal Coal and Coke traffic	193
Siam, Mineral output	303, 439
Persons employed	302, 439
Silicon iron	229
Silver bullion and specie, Imported and exported, Value of	270
extractors and refiners (<i>see</i> Copper and Lead smelters)	208, 209, 251, 252
extracted from imported Pyrites	240, 269
obtainable from British Lead ore	141, 242-245, 269
Prices of standard, in London market	271
ore, Imported	270
Silver or silver ore, Output of :	
United Kingdom	141, 242, 269
Abyssinia	303, 356
Algeria	303, 357
Argentine Republic	303, 358

	Page.
Silver or silver ore, Output of— <i>cont.</i>	
Austria	303, 362
Bolivia	303, 376
British Columbia	317
Canada	303, 316
Chili	303, 380
Colombia	303, 382
Dutch East Indies	303, 386
Ecuador	303, 387
German Empire	303, 398, 406
Honduras	414
Hungary	303, 368
Italy	303, 418
Japan	303, 421
Mexico	303, 423
New South Wales	303, 341
New Zealand	303, 344
Norway	303, 426
Ontario	319
Peru	303, 428
Prussia	405
Queensland	303, 346
Russia	303, 437
Saxony	409
South Australia	303
Spain	303, 442
Sweden	303, 445
Tasmania	303, 351
United States	303, 456
Uruguay	303
Western Australia	303, 355
Silver lead ore, Output of :	
United Kingdom	242-245
Algeria	357
Bolivia	376
Chili	380
France	391
Greece	411
Hungary	368
New South Wales	341
South Australia	349
Spain	442
Sweden	445
Tasmania	351
Singkep, Output of Tin	386
Persons employed	386
Slate, Output of :	
United Kingdom	10, 39, 141, 271-275, 308
Bavaria	404
Belgium	374
Canada	316
France	392
India	332-335
Newfoundland	339
Quebec	320
Queensland	346
Slate Quarries, Accidents	96, 97
Persons employed	63
Slates, roofing, Exported	275, 276
Sligo Co., Barytes	164, 172, 173
Bog ore	165
Limestone	165, 254
Persons employed	62, 66, 165
Sligo, Leitrim and Northern Counties Railway Coal and Coke traffic	192
Small detached coalfields, Counties	53
Fatal accidents	90-92
Output of minerals	184, 185
Persons employed	54, 55
Smelters, Antimony	167
Copper	208, 209
Lead	251, 252
Tin	283
Zinc	291
Soapstone, Output of :	
United Kingdom	276
Bavaria	404
Canada	316
France	392
India	332-335
United States	455
Soda (<i>see</i> Nitrate of soda).	
Sodium, Production in United Kingdom	141, 276
Sodium sulphate, Output of :	
German Empire	398
Prussia	406
Russia	437
Somali Coast Protectorate, Mineral deposits	348
Sombrero	348
Somersetshire, Chalk	160, 176
Clay	160, 178
Coal	160, 182, 186
Fuller's earth	178

	Page.
Somersetshire, Gravel and sand	160, 213
" Gypsum	160, 214
" Iron ore	160, 219, 224
" Limestone	161, 253
" Ochre	161, 257, 258
" Sandstone	161, 268
" Slate	161, 272
" Strontium sulphate	161, 276
" Coal conveyed by rail	190, 191
" Death rate from accidents	93
" Lead smelters	251
" Persons employed	56, 61, 64, 93, 161
Soudan, Mineral wealth	388
South Australia, Mineral output	303, 349
" Persons employed	302, 349
South Wales Coal-field, Counties	53
" " " Fatal accidents	90-92
" " " Mineral output	184, 185
" " " Persons employed	54, 55
Spain, Accidents	304, 442, 443
" Mineral output	303, 441, 442
" Persons employed	302, 440, 441
Spelter (<i>see</i> Zinc)	285
Spiegeleisen (<i>see</i> Iron)	229
Spitzbergen	443
Staffordshire, Chert and flint	160, 177
" Clay	160, 178
" Coal	160, 182, 186
" Gravel and sand	160, 213
" Gypsum	160, 214
" Igneous rocks	160, 215
" Iron ore	160, 219, 224
" Iron pyrites	160, 238
" Limestone	161, 253
" Salt	159, 265
" Sandstone	161, 268
" Blast furnaces	228, 232
" Coal conveyed by rail	190, 191
" Death rate from accidents	93
" Persons employed	56, 58, 61, 64, 93, 161
Staffordshire and Worcestershire Canal Coal and Coke traffic	194
" " " Salt conveyed	267
Standard silver, Prices in the London market	271
Steatite (<i>see</i> Soapstone).	
Stirlingshire, Clay	162, 178
" Coal	162, 183, 186
" Gravel and sand	162, 213
" Igneous rocks	162, 216
" Iron ore	162, 219, 220
" Limestone	163, 254
" Oil shale	163, 259
" Sandstone	163, 269
" Blast furnaces	228, 235
" Coal conveyed by rail	191
" Death rate from accidents	93
" Persons employed	56, 62, 65, 93, 163
Stokes, A. H., Precautions against dangers of electricity	84
" Remarks on Electric firing	84
" Use of Explosives and methods of firing in his district	83
Stone, Output of :	
United Kingdom	164, 165
Algeria	357
Belgium	374
Canada	316
Ceylon	325
Channel Islands	326
France	392
Holland	413
India	332-335
Malta	337
Newfoundland	339
New South Wales	341
Ontario	319
Queensland	346
Roumania	433
Tunis	449
United States	455
Victoria	353
Straits Settlements	349
Strontium sulphate, Output in United Kingdom	10, 19, 21, 39, 141, 276, 277, 308
Suffocation by natural gases, Accidents from	22, 23, 28, 82, 84, 91, 92
Suffolk, Chalk	160, 176
" Chert and flint	160, 177
" Clay	160, 178
" Gravel and sand	160, 213
" Persons employed	61, 64, 161
Sulphate of barium, Output of United Kingdom	171-172
" " " Spain	441
" " " sodium (<i>see</i> Sodium sulphate).	
" " " strontia (<i>see</i> Strontium sulphate).	

	Page.
Sulphur or sulphur ore, Output of :	
Austria	362
Greece	411
Hungary	368
Italy	418
Japan	421
New Zealand	544
Peru	428
Russia	437
Spain	442
Sweden	445
United States	452
Sumatra, Mineral output	386
" Persons employed	386
Summaries, County, of Mineral output and persons employed	144-168
Summary of fatal accidents in Mines and Quarries of the United Kingdom	1
Summary of fatal accidents in Mines and Quarries of the British Empire	304
Summary of fatal accidents in Mines and Quarries of Foreign countries	304
Summary of Metals produced from British ores	141
Summary of Mineral output of United Kingdom	10, 141
Summary of Mineral output of England, Wales, Scotland, Ireland, and Isle of Man, separately	142, 143
Summary of Mineral output of British Empire	303
" " " Foreign countries	303
Summary of Persons employed in Mines and Quarries of the United Kingdom	9
Summary of Persons employed in Mines and Quarries of the British Empire	302
Summary of Persons employed in Mines and Quarries of Foreign countries	302
Surface, Accidents at Mines, on	22-25, 28-31, 40, 41, 68, 73, 87-89, 91, 92, 118, 119
Surinam (<i>see</i> Dutch Guiana).	
Surrey, Chalk	160, 176
" Chert and flint	160, 177
" Clay	160, 178
" Fuller's earth	178
" Gravel and sand	160, 213
" Limestone	161, 253
" Sandstone	161, 268
" Lead smelters	251
" Persons employed	61, 64, 161
Sussex, Chalk	160, 176
" Chert and flint	160, 177
" Clay	160, 178
" Gravel and sand	160, 213
" Gypsum	160, 214
" Sandstone	161, 268
" Persons employed	61, 64, 161
Sutherland, Coal	162, 183, 186
" Sandstone	163, 269
" Persons employed	56, 65, 163
Sweden, Accidents	304, 445
" Mineral output	303, 445
" Persons employed	302, 444
Switzerland, Accidents	304, 448
" Mineral output	303, 447
" Persons employed	302, 446, 447
Syenite (<i>see</i> Igneous rocks)	215

T.

TAFF VALE RAILWAY Coal and Coke Traffic	191
Talc, Output of :	
Canada	316
France	392
Ontario	319
United States	455
Tasmania, Accidents	304, 305, 351
" Mineral output	303, 351
" Persons employed	302, 351
" Legislation	350
Tennessee, Accidents at coal mines	437
" Persons employed	434
" Coal-cutting machines	432
Timbering, Systematic, Rules for	79
Tin, Average price in the London market	280
" Exported	282
" Imported	281
" obtainable from British ore	141, 277-279

	Page.
Tin ore, Output of :	
Cornwall and Devon	277-279
Dolcoath Mine	112, 277
smelters in Cornwall	283
standards	281
stream works in Cornwall	279
Tin or tin ore, Output of :	
United Kingdom 10, 39, 141, 277-279, 303, 308, 309	
Austria	303, 362
Banca and Billiton	384
Bolivia	303, 376
Chili	303, 380
Dutch East Indies	303, 386
Federated Malay States	303, 328, 329
German Empire	303, 398
India	303, 332, 334
Japan	303, 421
Mexico	303, 423
New South Wales	303, 341
Portugal	431
Queensland	303, 346
Russia	437
Saxony	409
Siam	303, 439
Singkep	386
South Australia	303, 349
Spain	303, 442
Tasmania	303, 351
Victoria	303, 353
Western Australia	303, 355
Tipperary Co : Coal	164, 183, 186
Gravel and sand	164, 214
Limestone	165, 254
Sandstone	165, 269
Slate	165, 272
Persons employed	57, 66, 165
Titanium ore or rutile, Output of :	
Norway	426
United States	455
Tong-King, Output of coal	303, 414, 415
Tonite, Accidents with	101
Topaz, Output of Spain	442
Tourmaline, Output of India	332, 334
Trams and tubs, Accidents	22, 23, 28-31, 82, 91, 92
Transvaal, Output of Gold	303, 351
Trent and Mersey Navigation Coal and Coke traffic	194
Trinidad, Output of asphalt	352
Tripoli and infusorial earth, Production of :	
Canada	316
Nova Scotia	318
United States	455
Tungsten ore (<i>see</i> Wolfram).	
Tunis, Mineral output	303, 449
Turbaries, France, Output from	391
Holland,	412
Persons employed	412
Italy, Output from	418
Persons employed	416
Russia	435
Sweden	444
Turkey, Mineral resources	303, 449, 450
Turks and Caicos Islands, Output of Salt	303, 352
Tyrone Co : Clay	164, 179
Coal	164, 183, 186
Gravel and sand	164, 214
Igneous rocks	164, 216
Limestone	165, 254
Sandstone	165, 269
Persons employed	57, 66, 165

U.

UGANDA Protectorate, Mineral resources	352
Umbur, ochre, &c., Output of :	
United Kingdom	16, 39, 141, 257-259, 308
Cyprus	327
Saxony	409
Underground fires at Mines 22, 23, 28, 29, 75, 82, 84, 91, 92	
hauling accidents	22, 23, 82, 84-86
Union Canal Coal and Coke traffic	194
United States, Accidents	304
Machine mining	451, 452
Mineral output	303, 455, 456
Persons employed	302, 454

	Page.
Uranium ore, Output of :	
United Kingdom	10, 16, 17, 39, 141, 283, 308
Austria	362
German Empire	398
Saxony	409
Uruguay, Output of gold	303, 458
Utah, Accidents at Coal Mines	457, 458
Persons employed	454

V.

VENEZUELA, Output of gold	303, 459
Ventilation, use of mechanical ventilators	110
Bonus Board (Victoria)	353
Victoria Accidents	304, 305, 354
Mineral output	303, 353
Persons employed	302, 353
Mine Ventilation Bonus Board	353
Vitriol ore, Output of :	
Austria	362
German Empire	398
Hungary	358
Japan	421
Prussia	405

W.

WALES, Coal conveyed by rail from North and South	
Wales	190, 191
Mineral output of, Summary	142
(<i>See also under each County.</i>)	
North and South Wales Coal-fields :	
Counties	53
Fatal accidents	90-92
Mineral output	184, 185
Persons employed	54, 55
Warwickshire, Clay	160, 178
Coal	160, 182, 186
Gravel and sand	160, 213
Igneous rocks	160, 215
Iron ore	160, 219, 220, 224
Iron pyrites	160, 238
Limestone	161, 253
Sandstone	161, 268
Coal conveyed by rail	190, 191
Copper smelters	209
Death rate from accidents	93
Lead smelters	252
Tin smelters	283
Persons employed	56, 61, 64, 93, 161
Washington, Accidents at coal mine	457
Persons employed	454
Coal-cutting machines	452
Waterford Co : Gravel and sand	164, 214
Igneous rocks	164, 216
Limestone	165, 254
Sandstone	165, 269
Persons employed	66, 165
Waterford and Central Ireland Railway Coal and Coke traffic	192
Waterford, Limerick and Western Railway Coal and Coke traffic	192
Weaver Navigation Co. Salt conveyed	266-267
Wells, Brine, dredging, &c., County output of minerals from	158-159
Western Australia, Fatal accidents	304, 305, 355
Mineral output	303, 355
Persons employed	302, 354
Westfalite, accidents with	82
Westmeath Co., Limestone	165, 254
Persons employed	66, 165

	Page.
Westmoreland, Barytes	160, 171, 173
" Coal	160, 182, 186
" Gypsum	160, 214
" Igneous rocks	160, 215
" Lead ore	161, 242, 244
" Limestone	161, 253
" Sandstone	161, 268
" Silver	242, 244
" Slate	161, 272, 273
" Lead smelters	252
" Persons employed	56, 61, 64, 161
Westport-Cardiff (New Zealand) Coal Mine Fire Inquiry	344, 345
West Virginia, Accidents at Coal Mines	457, 458
" Output of coal	456
" Persons employed	454
" Coal-cutting machines	452
Wexford Co., Igneous rocks	164, 216
" Limestone	165, 254
" Sandstone	165, 269
" Slate	165, 272
" Persons employed	66, 165
Whetstones, Production of :	
Bavaria	404
France	392
White salt, Conveyed by railway, canal, &c.	266, 267
" Exported	267
" Produced in United Kingdom	265
Wicklow Co., Copper ore	201, 202
" Gravel and sand	164, 214
" Igneous rocks	164, 216
" Iron pyrites	164, 238
" Lead ore	165, 242, 245
" Ochre	165, 257, 258
" Silver	242, 245
" Persons employed	62, 66, 165
Wigtown, Igneous rocks	162, 216
" Persons employed	65, 163
Wiltshire, Chalk	160, 176
" Chert and flint	160, 177
" Clay	160, 178
" Gravel and sand	160, 213
" Iron ore	160, 219, 224
" Limestone	161, 253
" Sandstone	161, 268
" Blast furnaces	228, 233
" Persons employed	61, 64, 161
Winding by electricity	111
Wire-saw, Remarks on use of	112
Wolfram, Output of :	
United Kingdom	10, 39, 141, 284, 308
Austria	362
Bolivia	376
Federated Malay States	328
German Empire... ..	398
Portugal	431
Queensland	346
Saxony	409
South Australia... ..	349
Spain	442
Tasmania... ..	351
Worcestershire, Clay	160, 178
" Coal... ..	160, 182, 186
" Gravel and sand	160, 213
" Igneous rocks	160, 215
" Iron ore	160, 219, 220, 224
" Limestone	161, 253
" Salt	161, 265
" Sandstone	161, 268
" Blast furnaces	228, 233
" Copper smelters	209
" Death rate from accidents	93
" Persons employed	56, 61, 64, 93, 161
Woyning, Accidents at Coal Mines	457
" Persons employed at Coal Mines	454
" Coal-cutting machines	452

Y.

	Page.
YORKSHIRE, Alum shale	161, 180
" Barytes	160, 171, 173
" Chalk	160, 174
" Chert and flint	160, 177
" Clay	160, 178
" Coal	160, 182, 186
" Gravel and sand	160, 213
" Igneous rocks... ..	160, 215
" Iron ore	160, 219, 220, 224
" Iron pyrites	160, 238
" Lead ore	161, 242, 244
" Limestone	161, 253
" Salt	161, 265
" Sandstone	161, 268
" Slate	161, 272, 273
" Blast furnaces	228, 233
" Coal conveyed by rail	190, 191
" Copper smelters... ..	209
" Death rate from accidents	93
" Lead smelters... ..	202
" Persons employed	56, 58, 61, 64, 93, 161
" Coalfield, Counties	40
" " Fatal accidents	90-92
" " Mineral output	184, 185
" " Persons employed	54, 55

Z.

ZINC, Average price in the London market	280
" Diagram shewing fluctuations in price from 1873 to 1900	280
" Obtainable from British ores	141, 285-287
" Smelters in United Kingdom	287
" and zinc ore, Exported	280
" " Imported	280
" or zinc ore, Output of :	
United Kingdom	10, 16, 17, 39, 141, 285-288, 300
Algeria	306, 308
Austria	303, 307
Belgium	303, 302
Canada	305, 310
France	303, 301
German Empire... ..	303, 300
Greece	303, 311
Italy	303, 310
Mexico	303, 312
New South Wales	303, 341
Norway	303, 310
Ontario	310
Portugal	431
Prussia	400
Russia	303, 307
Saxony	409
South Australia... ..	303, 349
Spain	303, 442
Sweden	303, 441
Tunis	303, 340
United States	303, 435, 436

MINES AND QUARRIES:
GENERAL REPORT AND STATISTICS
For 1901.

PART IV.—COLONIAL AND FOREIGN STATISTICS.

STATISTICS RELATING TO PERSONS EMPLOYED, OUTPUT,
AND ACCIDENTS AT MINES AND QUARRIES IN THE
BRITISH COLONIES AND IN FOREIGN COUNTRIES.

EDITED BY

C. LE NEVE FOSTER, D.Sc., F.R.S.

Presented to both Houses of Parliament by Command of His Majesty.



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CONTENTS.

	PAGE.
Introduction	285, 286
British Empire :—	
Summary of Persons Employed at Mines and Quarries	288
Summary of Output of certain Minerals	289
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries	290, 291
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings :—	
United Kingdom	293-295
British Colonies and Dependencies :—	
Aden... ..	296
Australia	296-309
Bahamas	309
Barbados	309
Basutoland	309
Bechuanaland Protectorate... ..	310
British Borneo	310
British Central Africa Protectorate	311
British Guiana	311, 312
British New Guinea	312
British Solomon Islands	313
Canada	313-319
Cape Colony	320-322
Ceylon	324, 325
Channel Islands	325
Christmas Island	325
Cyprus	326
Federated Malay States	326-328
Gold Coast	328, 329
India	329-336
Malta	336
Natal	336, 337
Newfoundland	337, 338
New Zealand... ..	339, 340
Nigeria	341
Orange River Colony	341
Redonda	341
Rhodesia	342
Somali Coast Protectorate	342
Sombrero	342
Straits Settlements	342
Transvaal	342-344
Trinidad	345
Turks and Caicos Islands	345
Uganda Protectorate	346

Foreign Countries :—

PAUL

Summary of Persons Employed at Mines and Quarries	...	...	...	...	...	288
Summary of Output of certain Minerals	...	...	...	...	...	289
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries	...	...	...	...	...	290, 291

Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings:—

[illegible]

Foreign Countries—*continued.*Details relating to Persons Employed, &c.—*cont.*

	PAGE.
Ivory Coast	412
Japan	412-414
Johore... ..	414
Liberia	414
Luxemburg	414
Madagascar	414
Mexico	415, 416
Morocco	416
New Caledonia	416, 417
Nicaragua	417
Norway	417, 418
Paraguay	419
Persia	419
Peru	419, 420
Philippine Islands	421
Porto Rico	421
Portugal	421-423
Portuguese East Africa	424
Roumania	424, 425
Russia	426-429
Sahara	429
Sandwich Islands	430
Senegal	430
Servia	430, 431
Siam	431
Spain	432-435
Spitzbergen	435
Sweden	435-437
Switzerland	437-440
Tunis	440, 441
Turkey	441, 442
United States... ..	443-450
Uruguay	451
Venezuela	451

Index to Parts I., II., III., and IV.	453-477
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MINES AND QUARRIES:
GENERAL REPORT AND STATISTICS
For 1901.

PART IV.—COLONIAL AND FOREIGN STATISTICS.

INTRODUCTION.

This part of the General Report is intended to give general information concerning the mining and quarrying industries of the colonies and foreign countries ; it is compiled from various official and unofficial sources, which are duly indicated in every case. Great difficulties in preparing this part of the volume arise either from want of adequate official statistics or from the lateness of their publication. The figures relating to Austrian mining in 1901 were not received until the 23rd January last, whilst those for Belgium and Russia have not yet appeared.

The general results are summed up in Tables 276, 277, and 278, and though the figures are not complete, they are sufficient to give a fair general idea of the relative importance of mining in each country.

According to Table 276 the number of persons engaged in mining and quarrying at home and abroad exceeds $4\frac{1}{2}$ millions, of whom, roughly speaking, one-fifth are employed in the United Kingdom and one-third in the British Empire.

Turning from the working mining population to the mineral output as given in Table 277, it appears that the total amount of coal produced in the world amounted in 1901 to 789 million tons, of which the United States yielded rather more than one-third and the British Empire rather less than that proportion ; Germany's output was almost one-fifth. The United States, the British Empire, and Germany produced between them six-sevenths of the world's supply.

Following the alphabetical arrangement of the table we next come to copper, and as a producer of this metal the United States are far ahead of any other country.

In the case of gold the British Empire affords nearly one-half of the world's supply, and the United States more than a quarter.

The enormous extent of the iron resources of the United States will be appreciated when it is stated that their mines yielded more than three times as much metal as the United Kingdom and its colonies and possessions. Germany comes third on the list. It

is important to point out that the quantities of iron, and indeed the quantities of the other metals, are those which are considered obtainable from the ores raised in the countries in question, and must not necessarily be taken as a measure of their metallurgical industries. The United Kingdom is largely dependent upon supplies of iron ore from foreign countries, but the metal obtained from these sources is in no way reckoned in the 4 million tons of iron shown in Table 277.

The United States and Spain between them are responsible for one-half of the lead produced in the world ; the British Empire, thanks to Australia, gives rather more than one-fifth.

Petroleum, which year by year is becoming of more importance not only as an illuminant but also as a fuel, is obtained mainly from Russia and the United States ; the contribution of the British Empire is only one-seventieth of the total.

The actual salt resources of the various countries of the world must not be gauged solely by the figures given in the table. If the salt trade is made into a Government monopoly as an easy means of levying a tax which will touch all classes of society, the output of the country and the nominal value of its produce may be larger than they would be if there were free trade in the mineral.

The United States produce one-third of the silver of the world, and outstrip Mexico, though that country still yields very large supplies. The British Empire, in spite of the contributions from Australia and Canada, produces only one-ninth of the world's supply.

In the case of tin we take a better place, as the workings in the Malay Peninsula bring up our output to five-eighths of the total yield of the world.

The rich zinc mines of Silesia place the German Empire in the front rank as a producer of this metal, the United States taking the second place. The British out-put is comparatively insignificant.

Summing up these facts, it may be stated that of the total world's supply the British Empire produces about one-third of the coal, one-ninth of the copper, half of the gold, one-eighth of the iron, one-fifth of the lead, one-seventieth of the petroleum, one-quarter of the salt, one-ninth of the silver, five-eighths of the tin, and one-fiftieth of the zinc.

In Table 278 we find a record of the loss of life from mining accidents, though the figures are incomplete. For the metalliferous mines of the United States for instance, no figure can be included in the table, no general statistics of mining accidents in the United States being published. The total number of deaths in coal mining exceeds 4,000 annually, and more than one-fourth of them occur in British workings ; but the mere number of deaths is no criterion of the dangers of the occupation, and in order to measure them it is necessary to study the proportion which the fatalities bear to the number of persons engaged in the industry. The death-rates are set forth in Table 278, from which it appears that the average mortality from accidents of the coal miners of the world was slightly under 2 per 1,000. It is satisfactory to note that the figures for the United Kingdom and for the British Empire as a whole are decidedly below the general average.

C. LE NEVE FOSTER.

Home Office, Whitehall,

23rd February, 1903.

SUMMARIES.

**PERSONS EMPLOYED—OUTPUT—ACCIDENTS,
1900-1901.**

TABLE No. 276.

SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the YEARS 1900 and 1901.

Country.	1900.	1901.
GREAT BRITAIN AND IRELAND	908,412	933,366
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS :—		
Aden	*	*
Australia	118,055	110,724
Bahamas	400	423
Barbados	100†	100†
Basutoland	*	*
Bechuanaland Protectorate	*	*
British Borneo	*	*
British Central Africa Protectorate	*	*
British Guiana	5,616	13,602
British New Guinea	325†	325†
British Solomon Islands... ..	*	*
Canada (a)... ..	31,332	33,308
Cape Colony	14,645	15,844
Ceylon	160,803	160,803§
Channel Islands	1,200	1,200
Christmas Island	550	550§
Cyprus	*	*
Federated Malay States	168,000	162,577
Gold Coast... ..	2,913†	2,913†
India	133,128||	142,491||
Malta	*	*
Natal (including Zululand)	1,602	3,397
Newfoundland	1,352	1,421
New Zealand	15,962	15,486
Nigeria	*	*
Orange River	*	*
Redonda	146	—
Rhodesia	*	6,555¶
Somali Coast Protectorate	*	*
Transvaal	*	19,538**
Trinidad	*	*
Turks and Caicos Islands	*	*
Uganda Protectorate	*	*
TOTAL for BRITISH EMPIRE	1,564,541	1,624,623
FOREIGN COUNTRIES :—		
Austria-Hungary	233,471	239,984
Bosnia and Herzegovina	2,029	2,388
Belgium	171,467	171,467§
Bulgaria	2,158	1,501
Chili	19,672††	20,264††
Corea	1,236	1,236§
Denmark	—	—
Greenland	75	80
France	309,815	312,521
Algeria	5,919	6,768
New Caledonia	5,090†	5,090†
German Empire	733,683††	765,332††
Greece	9,500	9,500§
Holland	3,886	3,964
Dutch East Indies	25,144	25,383§§
Italy	102,728	128,478
Japan	140,846	140,846§
Luxemburg	6,207	4,714
Mexico	106,536|||	106,536|||
Norway	3,017	3,017§
Peru	105,000	105,000§
Portugal	10,476¶¶	9,509¶¶
Roumania	*	*
Russia	341,702|||	341,702|||
Servia	1,835	2,271
Siam	22,000|||	22,000|||
Spain	83,662	87,342
Sweden	13,861	14,583
Switzerland	1,877	1,641
United States	506,830(b)	543,193(c)
TOTAL for FOREIGN COUNTRIES	2,969,722	3,076,350
TOTAL for the WORLD	4,534,263	4,700,973

* Information not available.

† Figures for 1898.

‡ Figures for 1897.

§ Figures for 1900.

|| Returns incomplete.

¶ Employed in February, 1902.

** For six months only.

†† Persons employed in Saltpetre Works only.

‡‡ These figures include the average number of persons employed full time at Quarries see p. 394.

§§ Including some figures for 1900.

||| Figures for 1899.

¶¶ Including persons employed at Quarries for 1890.

(a) For British Columbia, Nova Scotia, Ontario, and Quebec only.

(b) Coal Miners only, and Ore Miners of Colorado, Montana, and Tennessee.

(c) Coal Miners' only for 1901 and Ore Miners of Colorado, Montana and Tennessee for 1900.

TABLE No. 277.

TABLE of OUTPUT of CERTAIN MINERALS and METALS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the Year 1901.

COUNTRY.	Coal.	Copper.	Fine Gold.	Iron.	Lead.	Petroleum.	Salt.	Fine Silver.	Tin.	Zinc.
	Metric Tons.	Metric Tons.	Kilos.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Kilos.	Metric Tons.	Metric Tons.
ITALY AND IRELAND..	222,582,123	541	175	4,157,573	20,355	8	1,811,670	5,427	4,683	8,558
COLONIES, DEPENDENT POSSESSIONS:—										
Aden	7,000,227	29,500*	108,685*	1,340*	170,220*	—	89,209 43,944 3,140	394,880*	4,414*	814*
British Somaliland Protectorate	—	—	—	—	—	30*	—	—	—	—
Cape Colony	36,856	—	933*	—	—	—	—	—	—	—
Central Africa Protectorate	—	—	2,705	—	—	—	—	—	—	—
Colon	—	—	237*	—	—	—	—	—	—	—
Gold Coast	5,612,108	18,575	36,804	239,610*	23,023	74,383*	53,913	157,953	—	—
German East Africa	306,113	12,443*	2	—	—	—	11,833† 11,080	—	—	—
India	—	—	—	—	—	—	—	—	—	—
Islands	—	—	—	—	—	—	—	—	—	—
Malay States	—	12	570	—	—	—	3,617	—	47,714	—
Northern Rhodesia	6,742,214	2†	14,137	25,500†	—	201,135	1,120,239	—	30*	—
Orange Free State	—	—	—	—	—	—	—	—	—	—
Portuguese East Africa	578,334	—	4	—	—	—	—	—	—	—
Sierra Leone	1,247,339	2,799*	68*	416,710*	—	—	—	—	—	—
Sudan	—	—	12,841*	—	—	—	—	17,764	—	—
Tanzania	—	—	—	—	—	—	—	—	—	—
Togo	—	—	5,352	—	—	—	—	—	—	—
Tunisia	—	—	7,179	—	—	—	—	—	—	—
Zanzibar	475,682	—	—	—	—	—	—	—	—	—
Zimbabwe	—	—	—	—	—	—	63,151	—	—	—
BRITISH EMPIRE..	244,463,996	63,874	184,854	4,887,733	213,598	275,556	3,301,196	576,004	56,791	9,897
FOREIGN COUNTRIES:—										
Argentina	—	—	999	—	—	—	14,000*	84	—	—
Australia	—	793	86†	—	—	—	25,401	1,144†	—	—
Bulgaria	40,787,895	1,361*	3,340	1,402,773*	14,478*	407,958	517,220	63,942	32*	8,296*
Hungary	445,007	264*	—	67,413*	—	—	17,019	—	—	—
Romania	23,462,817	—	—	90,480*	170*	—	—	—	—	3,236*
Serbia	—	—	8	—	347*	—	—	—	—	—
Siam	139,194	—	3,917*	—	—	—	11,536	435,000†	9,710*	—
Spain	226	30,570†	861*	—	273*	—	11	179,008†	3	—
Sweden	—	—	8,337†	—	—	—	—	—	—	—
Switzerland	—	—	1,798†	—	—	—	—	57,904†	—	—
Turkey	—	—	3,732*	—	—	—	—	—	—	—
U.S.S.R.	—	—	200*	—	—	—	—	—	—	—
Ukraine	—	—	162*	336,874*	—	—	—	—	—	—
Yugoslavia	32,325,302	229*	—	1,558,300*	14,451*	—	916,350	240*	—	28,923*
Guiana	213	91	—	267,940*	613*	—	18,518	12,842*	322*	—
Soudan	—	—	3,180*	—	—	—	—	—	—	—
China	248,622	—	84	—	—	—	—	—	—	—
Indo-China	—	—	826*	—	—	—	2,502	—	—	—
Malaya	—	76*	113	—	—	—	—	—	—	—
Empire	153,019,414	31,576	90	4,361,401*	4,510* 123,098 4,121	44,095	1,563,800 21,045	171,777 15,383	16*	7,100* 168,283 7,926
East Indies**	512,717	—	463†	269,759	—	—	—	—	—	—
Guiana	196,129	—	752†	—	—	126,004*	—	2,300†	18,201	—
West Indies††	—	—	—	—	—	—	—	—	—	—
.. .. .	—	2*	81*	—	—	—	21,953*	—	—	—
.. .. .	426,377	4,855*	13*	137,981*	25,178*	—	2,949*	38,626*	—	—
.. .. .	7,429,457	26,304	2,130	21,299	1,877	2,246 86,200*	435,187 659,118	14,687* 58,953	—	49,274*
.. .. .	58,676†	37,000*	13,311*	1,803,864*	79,497*	—	—	—	12	—
.. .. .	—	—	1,045*	—	—	—	1,518†	1,480,270*	—	190*†
.. .. .	—	4,084*	4	9,590*	—	—	—	—	—	—
.. .. .	47,500†	8,500†	1,815†	—	180†	36,640†	—	4,878	—	73*
.. .. .	16,000	6,000	2	11,015	281	—	15,849	265,700†	23	—
.. .. .	—	—	385	—	—	—	—	—	—	—
.. .. .	106,000	—	—	—	—	320,000	90,000	—	—	—
.. .. .	16,151,557	8,253	38,796	2,907,299	229	8,827,822	1,988,005	3,493	4	5,963
.. .. .	170,041	59	30	—	25*	—	—	13	—	50*
.. .. .	—	—	—	—	—	—	—	—	—	—
.. .. .	2,747,724	54,635*	16	3,858,000*	225,160*	—	345,090	96,538	4,000*	31,886*
.. .. .	271,508	833*	—	1,732,999*	3,978*	—	—	1,557	22*	19,450
.. .. .	—	—	—	—	—	—	50,591	—	—	—
.. .. .	200,000	1,740*	—	—	—	—	203,128††	—	—	—
.. .. .	268,151,103	273,173	118,922	16,137,710	245,044	8,811,326*	2,612,824	1,725,438	—	127,786
.. .. .	—	—	50	—	—	—	—	21	—	—
.. .. .	—	—	653	—	—	—	155,800*	—	—	—
FOREIGN COUNTRIES..	544,664,480	489,835	206,171	34,758,998	744,110	19,664,891	9,863,393	4,629,895	32,023	456,479
for the WORLD ..	789,128,476	553,709	391,025	39,396,733	953,708	19,940,447	12,864,589	5,293,899	88,814	465,946

Estimated.
figures for 1900.
included with Chili.

‡ Converted into fine silver, on the total value of ingots, matte, ore, and sulphide exported.

Including Bolivia.

†† Including some figures for 1900

† Figures for 1898.

Output of Coal for Sumatra only, and of Petroleum for Java for the year 1901 and for Sumatra for the year 1899.

⚡ Figures for 1894.

TABLE No. 278.

SUMMARY of ACCIDENTS at MINES, QUARRIES, and other MINERAL WORKINGS in the

COUNTRY.	DEATHS FROM ACCIDENTS.											
	1900.						1901.					
	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.
GREAT BRITAIN AND IRELAND ..	993	—	57	1,050	127	1,177	1,075	—	56	1,131	98	1,229
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—												
Aden*	—	—	—	—	—	—	—	—	—	—	—	—
Australia:—												
New South Wales	24	11	31	66	—	—	17	11	27	55	—	—
Queensland	9	17	1	27	—	—	1	18	4	21	—	—
South Australia	—	—	—	—	—	—	—	—	—	—	—	—
Tasmania*	—	—	—	7	—	—	—	—	—	8	—	—
Victoria	1	35	—	36	—	—	4	28	—	32	—	—
Western Australia	—	45	—	45	—	—	—	45	—	45	—	—
Bahamas*	—	—	—	—	—	—	—	—	—	—	—	—
Barbados*	—	—	—	—	—	—	—	—	—	—	—	—
Basutoland*	—	—	—	—	—	—	—	—	—	—	—	—
Bechuanaland Protectorate*	—	—	—	—	—	—	—	—	—	—	—	—
British Borneo*	—	—	—	—	—	—	—	—	—	—	—	—
British Central Africa Protectorate*	—	—	—	—	—	—	—	—	—	—	—	—
British Guiana	—	6	—	6	—	6	—	6	—	6	—	6
British New Guinea*	—	—	—	—	—	—	—	—	—	—	—	—
British Solomon Islands*	—	—	—	—	—	—	—	—	—	—	—	—
Canada:—												
British Columbia	17	†	13	30	—	—	102	†	14	116	—	—
Nova Scotia	22	—	—	—	—	—	14	1	—	—	—	—
Ontario	—	10	7	17	—	—	—	—	13	13	—	—
Quebec	—	—	—	—	—	—	—	—	—	—	—	—
Cape Colony	11	—	21†	—	—	—	4	—	36†	—	—	—
Ceylon*	—	—	—	13	5	18	—	—	—	—	—	—
Channel Islands*	—	—	—	—	—	—	—	—	—	—	—	—
Christmas Island*	—	—	—	—	—	—	—	—	—	—	—	—
Cyprus*	—	—	—	—	—	—	—	—	—	—	—	—
Federated Malay States	—	—	—	38§	—	—	—	—	—	21||	—	—
Gold Coast*	—	—	—	—	—	—	—	—	—	—	—	—
India	64	64	9	—	—	—	70	75	32	—	—	—
Malta*	—	—	—	—	—	—	—	—	—	—	—	—
Natal (including Zululand)*	1	—	—	—	—	—	43	—	—	—	—	—
Newfoundland	—	—	3	—	—	3	—	—	—	—	1	1
New Zealand	4	13	—	—	—	—	3	14	—	—	—	—
Nigeria*	—	—	—	—	—	—	—	—	—	—	—	—
Orange River*	—	—	—	—	—	—	—	—	—	—	—	—
Redonda*	—	—	—	—	—	—	—	—	—	—	—	—
Rhodesia*	—	—	—	—	—	—	—	—	—	—	—	—
Somali Coast Protectorate*	—	—	—	—	—	—	—	—	—	—	—	—
Transvaal	—	—	—	—	—	—	7**	19**	—	26**	—	—
Trinidad*	—	—	—	—	—	—	—	—	—	—	—	—
Turks and Caicos Islands*	—	—	—	—	—	—	—	—	—	—	—	—
Uganda Protectorate*	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL FOR BRITISH EMPIRE ..	1,146	201	—	—	—	—	1,340	215	—	—	—	—
FOREIGN COUNTRIES:—												
Austria-Hungary:—												
Austria	224	—	27	—	—	—	181	—	22	—	—	—
Hungary	—	—	—	85	—	—	—	—	—	107	—	—
Bosnia and Herzegovina	8	—	2	10	—	—	7	—	1	8	—	—
Belgium*	140	—	1	141	35	166	—	—	—	—	—	—
France	230	—	30	260	177	437	198	—	29	227	134	361
Algeria	—	—	—	6	19	25	—	—	—	3	5	8
New Caledonia*	—	—	—	—	—	—	—	—	—	—	—	—
German Empire	1,016	—	129†	1,145†	261	1,406†	1,127	—	162†	1,289†	229	1,518†
Greece*	—	—	—	9	—	—	—	—	—	—	—	—
Holland	2	—	—	2	—	—	2	—	—	2	—	—
Italy	—	—	—	119	23	142	—	—	—	126	24	150
Japan*	—	—	—	171	—	—	—	—	—	—	—	—
Mexico*	—	—	—	—	—	—	—	—	—	—	—	—
Norway*	—	—	—	—	—	—	—	—	—	—	—	—
Peru*	—	—	—	—	—	—	—	—	—	—	—	—
Portugal	—	—	7	7	—	—	—	—	9	9	—	—
Roumania*	—	—	—	—	—	—	—	—	—	—	—	—
Russia*	—	—	—	—	—	—	—	—	—	—	—	—
Servia	—	—	—	2	—	—	—	—	—	1	—	—
Spain	—	—	—	227	—	—	—	—	—	225	—	—
Sweden	—	—	—	—	—	—	—	—	—	—	—	—
Switzerland	—	—	—	2	1	14	—	—	—	—	—	10
United States	1,486§§	—	—	—	—	—	1,505§§	—	—	—	4	6
TOTAL FOR FOREIGN COUNTRIES.	3,106	—	—	—	—	—	3,020	—	—	—	—	—
TOTAL for the WORLD ..	4,252	—	—	—	—	—	4,360	—	—	—	—	—

* Information for 1901 not available.

† Included with other mines.

‡ Kimberley Diamond Mines only.

§ Excluding Perak.

¶ Negri Sembilan and Perak.

** The accidents at coal mines relate to producing collieries only.

*** For 6 months only.

TABLE No. 278.

BRITISH EMPIRE and in FOREIGN COUNTRIES during the Years 1900 and 1901.

DEATH-RATES PER 1,000 PERSONS EMPLOYED.												COUNTRY.
1900.						1901.						
Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	
1'29	—	1'20	1'29	1'35	1'30	1'36	—	1'20	1'35	1'04	1'32	GREAT BRITAIN AND IRELAND.
—	—	—	—	—	—	—	—	—	—	—	—	BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—
2'09	'61	2'14	1'51	—	—	1'37	'91	2'22	1'50	—	—	Aden.*
7'22	1'67	'46	1'99	—	—	'79	1'62	1'51	1'57	—	—	Australia:—
—	—	—	—	—	—	—	—	—	—	—	—	New South Wales.
—	—	—	1'02	—	—	—	—	—	1'14	—	—	Queensland.
1'24	1'21	—	1'21	—	—	4'84	1'01	—	1'12	—	—	South Australia.
—	2'69	—	2'54	—	—	—	2'69	—	2'52	—	—	Tasmania.*
—	—	—	—	—	—	—	—	—	—	—	—	Victoria.
—	—	—	—	—	—	—	—	—	—	—	—	Western Australia.
—	—	—	—	—	—	—	—	—	—	—	—	Bahamas.*
—	—	—	—	—	—	—	—	—	—	—	—	Barbados.*
—	—	—	—	—	—	—	—	—	—	—	—	Basutoland.*
—	—	—	—	—	—	—	—	—	—	—	—	Bechuanaland Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Borneo.*
—	1'08	—	1'08	—	1'07	—	'44	—	'44	—	'44	British Central Africa Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Guiana.
—	—	—	—	—	—	—	—	—	—	—	—	British New Guinea.*
—	—	—	—	—	—	—	—	—	—	—	—	British Solomon Islands.*
4'15	†	3'48	3'83	—	—	25'67	†	3'55	14'64	—	—	Canada:—
3'32	13'33	3'47	6'15	—	—	1'83	1'13	—	—	—	—	British Columbia.
—	—	—	—	—	—	—	—	—	—	—	—	Nova Scotia.
—	—	—	—	—	—	—	—	—	—	—	—	Ontario.
3'18	—	3'04†	—	'17	'08	1'55	—	3'21†	—	—	1'40	Quebec.
—	—	—	—	—	—	—	—	—	—	—	—	Cape Colony.
—	—	—	—	—	—	—	—	—	—	—	—	Ceylon.*
—	—	—	—	—	—	—	—	—	—	—	—	Channel Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Christmas Island.*
—	—	—	—	—	—	—	—	—	—	—	—	Cyprus.*
—	—	—	—	—	—	—	—	—	—	—	—	Federated Malay States.
'75	2'58	'82	—	—	—	'75	2'90	1'42	—	—	—	Gold Coast.*
'62	—	—	—	—	—	12'66	—	—	—	—	—	India.
1'63	'96	7'46	—	—	2'22	1'09	1'10	—	—	1'05	'70	Malta.*
—	—	—	—	—	—	—	—	—	—	—	—	Natal (including Zululand).†
—	—	—	—	—	—	—	—	—	—	—	—	Newfoundland.*
—	—	—	—	—	—	—	—	—	—	—	—	New Zealand.
—	—	—	—	—	—	—	—	—	—	—	—	Nigeria.*
—	—	—	—	—	—	—	—	—	—	—	—	Orange River.*
—	—	—	—	—	—	—	—	—	—	—	—	Redonda.*
—	—	—	—	—	—	—	—	—	—	—	—	Rhodesia.*
—	—	—	—	—	—	1'79**	1'22**	—	1'33**	—	—	Somali Coast Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	Transvaal.
—	—	—	—	—	—	—	—	—	—	—	—	Trinidad.*
—	—	—	—	—	—	—	—	—	—	—	—	Turks and Caicos Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Uganda Protectorate.*
1'29	1'69	—	—	—	—	1'45	1'55	—	—	—	—	TOTAL FOR BRITISH EMPIRE.
1'84	—	1'15	—	—	—	1'39	—	'93	—	—	—	FOREIGN COUNTRIES:—
7'96	—	2'85	1'11	—	—	4'74	—	2'76	1'43	—	—	Austria-Hungary:—
1'05	—	'70	1'05	'67	'97	—	—	—	3'72	—	—	Austria.
1'42	—	1'78	1'45	1'28	1'41	1'21	—	1'78	1'26	1'01	1'16	Hungary.
—	—	—	2'72	5'11	4'22	—	—	—	1'10	1'24	1'18	Bosnia and Herzegovina.
—	—	—	—	—	—	—	—	—	—	—	—	Belgium.*
2'19	—	—	2'02††	1'65	1'94	2'22	—	—	2'12††	1'54	2'01	France.
1'53	—	—	'95	—	—	—	—	—	—	—	—	Algeria.
—	—	—	1'53	'73	1'38	1'47	—	—	1'47	—	—	New Caledonia.*
—	—	—	1'76	—	—	—	—	—	1'86	'42	1'17	German Empire.
—	—	—	1'31	—	—	—	—	—	—	—	—	Greece.*
—	—	—	—	—	—	—	—	—	—	—	—	Holland.
—	—	—	—	—	—	—	—	—	—	—	—	Italy.
—	—	—	—	—	—	—	—	—	—	—	—	Japan.*
—	—	—	—	—	—	—	—	—	—	—	—	Mexico.*
—	—	—	—	—	—	—	—	—	—	—	—	Norway.*
—	—	—	—	—	—	—	—	—	—	—	—	Peru.*
—	—	1'40	1'22	—	—	—	—	2'24	1'88	—	—	Portugal.
—	—	—	—	—	—	—	—	—	—	—	—	Roumania.*
—	—	—	—	—	—	—	—	—	—	—	—	Russia.*
—	—	—	1'09	—	—	—	—	—	'44	—	—	Servia.
—	—	—	2'71	—	—	—	—	—	2'57	—	—	Spain.
—	—	—	—	—	1'01	—	—	—	—	—	'68	Sweden.
3'29§§	—	—	4'94	'68	1'60	3'12§§	—	—	4'72	3'29	3'66	Switzerland.
—	—	—	—	—	—	—	—	—	—	—	—	United States.
2'33	—	—	—	—	—	2'35	—	—	—	—	—	TOTAL FOR FOREIGN COUNTRIES.
1'91	—	—	—	—	—	1'97	—	—	—	—	—	TOTAL for the WORLD.

†† Including accidents at Smelting Works.

‡ This death-rate represents the persons insured in the mining and smelting branch of the German Official Insurance Association.

For true mining death-rates in Prussia see p. 399.

§§ The figures relate to 19 of the principal coal-producing states.

BRITISH EMPIRE.

GREAT BRITAIN AND IRELAND,

WITH THE

ISLE OF MAN.

The following Tables, 279 to 284, summarize the results of Parts II. and III. of the General Report :—

TABLE 279.

PERSONS EMPLOYED at all the MINES for the Years 1900 and 1901.

Year.	Total Number of Mines at Work.	Under-ground.			Above-ground.			Total Under and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1900	4,148	644,242	None	644,242	165,052	5,228	170,275	814,517
1901	4,128	666,626	None	666,626	166,964	5,588	172,552	839,178
Increase or decrease ...	- 20	+ 22,384	—	+ 22,384	+ 1,912	+ 365	+ 2,277	+ 24,661

TABLE 280.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the
Years 1900 and 1901.

Year.	Total Number of Quarries at Work.	INSIDE THE QUARRIES, i.e., inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, i.e., outside the actual pits, holes, or excavations.			Total Number of Persons Employed Inside and Outside the Quarries.
		Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1900	6,959	60,621	10	60,631	33,219	45	33,264	93,895
1901	6,993	59,964	4	59,968	34,181	39	34,220	94,188
Increase or decrease	+ 34	- 657	- 6	- 663	+ 962	- 6	+ 956	+ 293

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 281.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, and other WORKINGS.*

Mineral.	1900.			1901.		
	Quantity.		Value at the Mines and Quarries.	Quantity.		Value at the Mines and Quarries.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alum shale	1,308	1,329	164	3,954	4,077	494
Arsenical pyrites	9,578	9,727	8,710	2,578	2,619	39,454
Arsenic	4,081	4,146	67,028	3,361	3,415	4,375
Barytes	39,456	39,939	39,244	27,618	28,056	37,810
Bauxite	5,779	5,872	1,350	10,191	10,355	2,903
Bog ore	4,153	4,220	1,068	2,606	2,643	651
Chalk... ..	4,373,331	4,443,612	208,082	4,328,344	4,397,904	196,451
Chert and Flint	77,698	78,940	13,900	130,567	132,662	19,887
Clay	14,049,694	14,275,158	1,571,048	14,161,877	14,389,141	1,597,483
Coal	225,181,300	228,794,919	131,652,596	219,046,945	222,562,123	102,486,553
Copper ore	9,108	9,254	34,508	6,407	6,510	23,766
Copper precipitate	380	386	2,450	385	391	2,554
Fluor spar	1,448	1,471	1,604	4,314	4,382	2,226
Gold ore	20,802	21,136	42,925	16,374	16,637	13,920
Gravel and Sand	1,837,303	1,866,335	183,163	1,958,229	1,990,365	149,183
Gypsum	203,038	211,377	69,642	200,766	203,988	68,930
Igneous Rocks	4,634,301	4,708,670	1,338,747	5,049,312	5,130,341	1,333,325
Iron ore	14,028,208	14,253,327	4,224,400	12,275,198	12,472,186	3,222,460
Iron pyrites	12,379	12,476	5,788	10,238	10,408	4,764
Lead ore	32,010	32,524	349,094	27,976	28,425	224,109
Limestone (other than Chalk)	11,905,477	12,096,531	1,300,314	11,180,579	11,360,000	1,257,381
Manganese ore	1,362	1,384	675	1,646	1,672	894
Mica	—	—	—	3,165	3,216	1,266
Ochre, Umber, &c.	15,200	15,444	13,398	14,542	14,775	13,917
Oil shale	2,282,221	2,318,345	627,844	2,354,356	2,392,138	589,162
Petroleum	—	—	—	8	8	19
Phosphate of lime	620	630	1,085	79	80	136
Salt	1,861,347	1,891,217	611,920	1,783,056	1,811,670	572,990
Sandstone	5,019,874	5,100,431	1,586,045	5,115,675	5,197,769	1,637,021
Slate	585,859	595,281	1,528,336	488,772	496,616	1,304,647
Sulphate of strontia	9,121	9,267	4,560	16,651	16,918	8,325
Tin ore (dressed)	6,800	6,909	523,604	7,288	7,405	478,556†
Titanium ore	41	42	1,517	79	80	2,923
Wolfram	9	9	351	21	21	408
Zinc ore	24,675	25,071	97,606	23,752	24,133	70,764
Total values	—	—	135,957,676	—	—	115,351,713

* This table does not include the produce of quarries less than 20 feet deep except in the case of bog ore, iron ore, ochre, phosphate of lime, sulphate of strontia, tin ore and wolfram.

† This value was incorrectly given as £458,559 in Part III.

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 282.

SUMMARY of the METALS obtainable by SMELTING from the ORES in the preceding TABLE.

Metal.	1900.			1901.		
	Quantity.		Value at the Average Market Price.	Quantity.		Value at the Average Market Price.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Aluminium	560	589	72,800	(a)	—	(a)
Copper	765	777	59,995	532	541	37,661
Gold	oss. 14,004	kilos. 438	52,147	oss. 6,223	kilos. 194	22,042
Iron	4,666,942	4,741,835	19,596,910	4,091,908	4,157,573	12,826,622
Lead	24,364	24,755	418,960	20,034	20,355	254,599
Silver	oss. 190,850	kilos. 5,938	22,463	oss. 174,466	kilos. 5,427	19,764
Sodium	250	254	31,000	350	356	51,000
Tin	4,268	4,336	587,869	4,560	4,633	556,571
Zinc	9,066	9,211	188,573	8,418	8,553	149,174
Total values	—	—	21,030,719	—	—	13,917,433

(a) Information not supplied

TABLE 283.

FATAL ACCIDENTS and DEATHS at all the MINES for the Years 1900 and 1901.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate from Accidents.		
	Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.	Per 1,000 Persons employed Under- ground.	Per 1,000 Persons employed Above- ground.	Per 1,000 Persons employed Under and Above Ground.
1900	884	115	999	931	119	1,050	1·45	·70	1·29
1901	826	152	978	978	153	1,131	1·47	·89	1·35
Increase or decrease ...	— 58	+ 37	— 21	+ 47	+ 34	+ 81	+ ·02	+ ·19	+ ·06

TABLE 284.

DEATHS from ACCIDENTS at QUARRIES* during the Years 1900 and 1901.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate per 1,000 Persons employed.		
	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.
1900	112	12	124	115	12	127	1·90	·36	1·35
1901	85	12	97	83	12	98	1·43	·35	1·04
Increase or decrease ...	— 27	=	— 27	— 29	=	— 29	— ·47	— ·01	— ·31

* More than 20 feet deep.

BRITISH COLONIES AND DEPENDENCIES.

Aden.

Salt is made by the evaporation of sea-water, and the Government revenue is partly obtained from duty upon this product.

TABLE 285.

	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
Salt* ...	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
	49,763	50,562	19,704	87,800	89,209	34,885

Australia.

The principal mineral product of the Commonwealth of Australia is gold. The output in 1901 was 3,333,541 ozs. (103,685 kils.) of fine gold, or roughly speaking one-fourth of the total quantity raised in the world. The most productive of the six States is Western Australia, with an output more than twice as large as that of any one of its sisters. These in order of production may be arranged as follows:—Victoria, Queensland, New South Wales, Tasmania, South Australia.

The Commonwealth is now producing about 7 million tons of coal annually; nearly 87 per cent. of the total is furnished by New South Wales.

Tasmania is the great copper producing State, thanks especially to the yield of the Mount Lyell district.

The famous mines at Broken Hill in New South Wales, produce far more silver lead ore than all the other five States put together.

Full details concerning each individual State will be found under its own special heading.

TABLE 286.

PERSONS EMPLOYED at all MINES in the COMMONWEALTH of AUSTRALIA during the Years 1900 and 1901.

State.	1900.			1901.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
New South Wales	†	†	43,745	†	†	36,615
Queensland ...	†	†	13,572	†	†	13,818
South Australia ...	†	†	6,304	†	†	7,007
Tasmania ...	†	†	7,020†	†	†	6,435§
Victoria ...	†	†	29,865	†	†	28,670
Western Australia	9,046	8,689	17,735	9,119	8,760	17,879
Total ...	—	—	118,241	—	—	110,424

* *Statistics of Mineral Production in India in the ten years 1892 to 1901.* Calcutta, 1902, p. 2.

† Not stated.

‡ For year ended June, 1901.

§ " " 1902.

AUSTRALIA—continued.

TABLE 287.
QUANTITY and VALUE of MINERAL produced in the COMMONWEALTH OF AUSTRALIA
during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite	1,915	1,946	5,745	3,146	3,196	9,438
Antimony and Antimony Ore.	248	252	2,429	88	89	1,188
Asbestos	90	91	89	—	—	—
Bismuth	11	11	5,640	21	21	6,665
" Ore	8	8	1,865	20	20	3,684
Bluestone	110,276	112,046	12,363	94,807	96,328	12,386
Chrome Iron Ore ...	3,285	3,338	11,827	2,483	2,523	7,774
Clays	—	—	9,000	—	—	11,500
Coal	6,377,645	6,479,991	2,035,437	6,889,665	7,000,227	2,630,879
Cobalt	143	145	1,590	111	113	1,051
Coke	126,213	128,238	109,620	128,882	130,950	105,665
Copper	20,274	20,599	1,572,012	25,253	25,658	1,721,243
" Ore	22,080	22,384	266,811	22,343	22,702	228,211
Diamonds	carats 9,829½	grams 2,019	5,668	carats 9,322	grams 1,914	9,756
	—	—	24	—	—	—
Fireclay	29	29	109	17	17	35
Gold	ozs. 3,800,894	kilos. 118,221	13,692,390	ozs. 3,861,523*	kilos. 119,998	14,185,641
Granite	9,000	9,144	900	4,000	4,064	1,100
Infusorial Earth... ..	—	—	—	300	305	1,500
Iron Ore	2,772	2,810	3,517	2,199	2,234	1,217
" Oxide of	313	318	686	129	131	229
Ironstone, Flux ...	25,397	25,805	20,208	24,705	25,101	16,782
Lead, Carbonate† ...	1,811	1,840	60,888	1,915	1,946	82,690
" Chloride†	78	79	4,499	—	—	—
" Pig	5,398	5,484	81,500	1,986	2,018	25,526
" Ore	268	272	533	9	9	109
Limestone... ..	42,510	43,193	10,226	49,916	50,716	14,384
Manganese	93	94	251	362	367	1,149
Mica	—	—	4	—	—	—
Molybdenite	11	11	561	—	—	—
Oil Shale	22,862	23,229	20,652	54,774	55,653	41,489
Opal	—	—	87,500	—	—	127,400
Platinum	ozs. 530	kilos. 16	1,007	ozs. 389	kilos. 12	779
Porphyry	14,794	15,031	1,624	18,728	19,029	2,803
Sandstone... ..	6,373	6,475	3,920	26,730	27,159	7,890
Salt	33,556	34,094	37,629	43,000	43,344	47,873
Sapphires, &c.	—	—	900	—	—	6,000
Silver	ozs. 915,942	kilos. 28,488	106,549	ozs. 1,080,931	kilos. 33,621	120,334
Silver Lead Ore ...	465,026	472,488	2,795,712	451,475	458,721	2,007,284
Slate	50	51	40	—	—	—
Tin Ingots	901	915	120,032	656	667	76,851
" Ore	5,042	5,122	404,101	5,622	5,712	350,073
Volcanic Ash	92,510	93,995	7,323	87,920	89,331	6,960
Wolfram	216	219	7,665	77	78	1,145
Zinc Ore	20,269	20,594	44,187	1,655	1,681	7,304
Sundries (including some Building Stone).	—	—	146,490	—	—	199,925
Total	—	—	21,701,713	—	—	22,083,907

* Estimated to contain 3,333,541 ozs. of fine gold.

† Product of the leaching plants at Broken Hill, New South Wales.

AUSTRALIA—continued.

TABLE 288.

ACCIDENTS at all MINES in the COMMONWEALTH of AUSTRALIA during the Years 1900 and 1901.

State.	1900.		1901.	
	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.
New South Wales	66	1·51	55	1·50
Queensland	27	1·99	21	1·57
South Australia	*	*	*	*
Tasmania	7†	1·02†	8‡	1·14‡
Victoria	36	1·21	32	1·13
Western Australia	45	2·54	45	2·52
Total	181	1·59	161	1·56

NEW SOUTH WALES.§

Coal and the ores of gold, lead and silver are the principal minerals worked in this State.

Coal.—The existence of coal has now been known for rather more than a hundred years, and the quantity raised during the last century is reckoned to be more than 76 million tons, of which more than 75 million have been obtained since 1857. The output for 1901, reached nearly 6 million tons, and is the greatest hitherto recorded.

Excluding lignite and seams of Triassic age, it is reckoned that the main coal-bearing rocks of the Colony extend over an area of 24,000 to 28,000 square miles around the seaport of Sydney.

Copper.—There was a decrease of £14,734 in the value of the copper produced in 1901 compared with the year 1900. The principal mine at the present time is at Cobar.

Diamonds.—Diamonds are found in several parts of the Colony; but all those obtained in 1901 came from Copeton (Boggy Camp) Field.

Gold.—The most important gold-yielding districts in 1901 were Bathurst, Cobar, Lachlan Mudgee, Peel and Uralla, Southern, Tumut and Adelong.

Following the lead of New Zealand, dredging for gold has been commenced in some of the rivers; during the year 1901 there were some 33 dredging plants in operation.

Silver and lead.—The silver and lead mining of the Colony is practically concentrated at Broken Hill, in the Albert Mining District.

* Not stated.

† For year ended June, 1900.

‡ 1901.

§ Annual Report of the Department of Mines and Agriculture for 1901: Sydney, 1902; and Pittman, *The Mineral Resources of New South Wales*. Sydney, 1901.

AUSTRALIA.—NEW SOUTH WALES—*continued.*

TABLE 289.
PERSONS EMPLOYED at all MINES during the Years 1900 and 1901.*

Kind of Mines.	1900.			1901.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ...	9,000	2,333	11,333	9,644	2,547	12,191
Gold { alluvial ...	—	—	8,387†	—	—	5,409‡
quartz ...	—	—	9,571	—	—	6,655
Shale ...	105	53	158	148	76	224
Silver, Lead and Zinc.	—	—	8,196	—	—	6,298
Other mines ...	—	—	6,100	—	—	5,838
Total ...	—	—	43,745	—	—	36,615

TABLE 290.
QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.§

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite ...	1,915	1,948	5,745	3,146	3,196	9,438
Antimony and Antimony ore ...	248	252	2,429	88	89	1,183
Bismuth ...	11	11	5,640	21	21	6,665
Chrome iron ore ...	3,285	3,338	11,827	2,483	2,523	7,774
Coal ...	5,507,497	5,595,879	1,668,911	5,968,426	6,064,205	2,178,929
Cobalt ...	143	145	1,590	111	113	1,051
Coke ...	126,213	128,238	109,620	128,482	130,950	105,665
Copper (ingots) ...	5,622	5,712	395,103	5,688	5,779	383,098
" (ore and regulus)...	1,470	1,494	32,933	1,114	1,132	30,204
Diamonds ...	carats 9,828½	grams 2,019	5,663	carats 9,322	grams 1,914	9,756
Fireclay (exported) ...	29	29	109	17	17	35
Gold ...	ozs. 345,650	kilos. 10,751	1,194,521	ozs. 267,061	kilos. 8,307	921,282
Iron stone flux|| ...	13,146	13,357	10,945	4,136	4,202	3,536
Iron, oxide of (exported) ...	313	318	686	129	131	229
Lead (pig) ...	4,811	4,888	73,759	1,425	1,448	17,811
" (carbonate)¶ ...	1,811	1,840	60,888	1,915	1,946	82,690
" (chloride)¶ ...	78	79	4,499	—	—	—
Limestone (flux) ...	17,000	17,273	3,962	26,570	26,996	5,794
Manganese ore ...	18	18	46	12	12	24
Oil shale ...	22,862	23,229	20,652	54,774	55,653	41,489
Opal ...	—	—	80,000	—	—	120,000
Platinum ...	ozs. 530	kilos. 16	1,007	ozs. 389	kilos. 12	779
Silver (ingots and matte) ...	ozs. 774,203	kilos. 24,080	90,243	ozs. 448,501	kilos. 13,950	50,484
Silver lead and ore** ...	438,838	445,880	2,513,874	417,078	423,772	1,803,979
Tin (ingots) ...	901	915	120,032	656	667	76,851
" ore ...	15	15	900	11	11	464
Zinc ore ...	20,269	20,584	44,187	632	642	4,057
Sundry minerals (including building stone).	—	—	111,049	—	—	143,368
Total value ...	—	—	6,570,820	—	—	6,006,635

* Annual Report of the Department of Mines and Agriculture for 1900, pp. 4 and 118; and for 1901, pp. 4 and 92.

† Including 779 Chinese.

‡ 473

§ Annual Report of the Department of Mines and Agriculture for 1901, pp. 2 and 49.

|| Used for metallurgical works.

¶ The lead carbonate and lead chloride are products of the leaching plants at Broken Hill.

** As the bulk of the silver is exported in the form of silver-lead, the quantity of fine silver contained therein can only be an approximation. It is stated in the Report of the Department of Mines (p. 47) that 8,043,280 ozs. or 250,174 kilos. of silver were won at the Broken Hill mines during the year 1901.

AUSTRALIA.—NEW SOUTH WALES—continued.

TABLE 291.

DEATHS FROM ACCIDENTS at all MINES during the Years 1900 and 1901.*

Kind of Mines.	1900.		1901.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal and shale ...	24	2·09	17	1·37
Gold { alluvial ...	2	·24	6	1·11
{ quartz ...	9	·94	5	·75
Silver and lead ..	26	3·17	23	3·65
Other mines ...	5	·82	4	·69
Total ...	66	1·51	55	1·50

TABLE 292.

DEATHS FROM ACCIDENTS at COAL and SHALE MINES during the Years 1900 and 1901.†

Year.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
1900 ...	20	4	24	2·20	1·68	2·09
1901 ...	16	1	17	1·63	·38	1·37

The following table shows an improvement during the past five years in the cases of lead poisoning at the Broken Hill mines:—

TABLE 293.

BROKEN HILL MINES.‡

Year.	Number of Persons Employed.	Cases of Lead Poisoning Reported.	Percentage of Persons Affected.
1896	5,400	44	·81
1897	6,473	17	·26
1898	6,842	14	·20
1899	7,252	13	·18
1900	7,405	5	·07
1901	6,989	13	·19

* Annual Report of the Department of Mines and Agriculture for 1900, pp. 4, 88, and 89 and 1901, pp. 4 and 77.

† Corresponding Reports for 1900, pp. 123 and 130, and for 1901, pp. 98 and 103.

‡ " " 1900, p. 92, and for 1901, p. 78.

AUSTRALIA.—NEW SOUTH WALES—*continued.*

The Coal Mines Regulation Acts of 1896 and 1900 have been repealed, and the working of coal and shale mines in the colony is now governed by the "Coal Mines Regulation Act, 1902." The statute is drawn up much in the same way as the Imperial Act, and contains 42 general rules. The ventilation rule is more explicit than ours, as it not only demands at least 100 cubic feet of air per minute for each man, boy, and horse, but also "as much more as the inspector shall direct." Sinking shafts more than 150 feet in depth must be provided with guides and guide attachments to prevent the bucket from swinging in the shaft.

The working of mines other than coal and shale mines is now regulated by a Statute passed in December, 1901, entitled the "Mines Inspection Act, 1901." Managers must hold certificates of competency or of service. The former are obtained after examinations conducted by a Board appointed by the Minister of Mines. Engine drivers must likewise hold certificates of competency or service.

Many of the other requirements of the Act are to a certain extent similar to those of the Statutes regulating mining in the United Kingdom.

The following are some of the points in which there is a difference.

Except in cases of emergency, persons must not be employed below ground for more than eight hours consecutively, or for more than 48 hours in any week.

The Governor may make regulations for the prevention of lead poisoning, and these are unquestionably necessary in the case of mines where carbonate of lead is worked.

There are 53 general rules, and some of them contain numerous sub-divisions.

The owners of mines using machinery for drainage are empowered to require the owners of adjacent mines to contribute a fair share of the total expense of drawing the water from the mines drained by such machinery.

Boilers must be thoroughly cleansed once in every six months, and examined and tested hydraulically once in every 12 months. The test of working boilers must be $1\frac{1}{2}$ times the pressure at which the safety valve blows off, and that of new boilers double the intended working pressure.

Air receivers must be tested once in 12 months to one-third over the allowed working pressure.

Steam gauges must be tested and adjusted once in 12 months, and no gauge is passed which varies more than five pounds from the standard gauge.

A winding cage must be provided with safety catches and a detaching hook.

The Governor has power to amend or repeal these general rules.

An inspector may by notice in writing require special rules to be established.

QUEENSLAND.*

As will be seen by the table on the following page, Queensland produces a great variety of minerals; but at the present time none are of much importance except gold.

Gold.—Queensland's goldfields are numerous. The most important is Charters Towers, which produced last year nearly one-half of the total output of the colony. It must be recollected, however, that the Charters Towers gold is of poor quality, for it contains on an average only 62 per cent. of fine gold. The Mount Morgan field comes next in importance; it yields a far purer gold.

* *Annual Report of the Under-Secretary for Mines for 1901.* Brisbane, 1902.

AUSTRALIA.—QUEENSLAND—*continued.*

TABLE 294.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

Kind of Mines.					1900.	1901.
Coal	...	...	...	...	1,246	1,266
Gold	{ alluvial	...	...	...	2,635*	2,098†
	{ vein	...	...	...	7,528	7,340
Other mines	...	...	...	...	2,163	2,649
Total	...	...	...	...	13,572	13,353

TABLE 295.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Bismuth ore	8	8	1,865	20	20	2,684
Bismuth, Wolfram, and Molybdenite.	—	—	—	26	26	1,609
Coal	497,132	505,110	173,705	539,472	548,129	189,877
Copper	384	390	23,040	3,061	3,110	194,227
Gold (crude)	ozs. 963,189§	kilos. 29,959	2,871,709	ozs. 835,553||	kilos. 25,988	2,541,892
Iron ore	—	—	—	430	437	215
Lead	205	208	3,359	561	570	6,993
Manganese ore	75	76	205	218	221	795
Molybdenite	11	11	561	—	—	—
Opal	—	—	7,500	—	—	7,400
Gems, other than Opal	—	—	900	—	—	6,000
Silver	ozs. 112,990	kilos. 3,514	12,712	ozs. 571,561	kilos. 17,778	62,241
Stone† :—						
Bluestone	110,276	112,046	12,363	94,807	96,328	12,336
Granite	9,000	9,144	900	4,000	4,064	1,100
Limestone	9,583	9,737	2,670	5,136	5,218	4,242
Porphyry	14,794	15,031	1,624	18,728	19,029	2,803
Sandstone	6,373	6,475	3,920	26,730	27,159	7,890
Slate	50	51	40	—	—	—
Volcanic Ash	92,510	93,995	7,323	87,920	89,331	6,960
Tin ore (dressed)	1,123	1,141	74,041	1,661	1,658	93,723
Wolfram ore	189	192	6,605	72	73	1,145
Total value	—	—	3,205,042	—	—	3,145,182

* Including 472 Chinese.

† " 465 "

‡ Statistics of Queensland for 1901, Brisbane, 1902.

§ Fine gold 676,029 ozs., or 21,027 kilos.

|| " 598,382 " or 18,612 "

AUSTRALIA.—QUEENSLAND—*continued.*

TABLE 296.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.

Kind of Mines.	1900.		1901.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	9	7·22	1	·79
Gold	17	1·67	16	1·62
Other mines ...	1	·46	4	1·51
Total	27	1·99	21	1·57

“The Mining Act Amendment Act of 1901” amends “The Mining Act of 1898” slightly, and adds some provisions applicable to mining leases granted for the construction of tramways.

Mr. J. Malcolm Maclaren, Assistant Government Geologist, has furnished a useful contribution to mining literature in his report upon “Queensland Mining and Milling Practice,” which was presented to both Houses of Parliament last year.

SOUTH AUSTRALIA.*

There are no records in the Mines Department affording information as to the number of deaths from accidents in South Australia proper, which, however, is known to be very small. It is estimated that during the year 1901 5,750 persons were engaged in mining in that division of the Colony, and principally for copper and gold. Of the 1,257 persons engaged in mining in the Northern Territory, 94 per cent. were Chinese.

Copper.—Copper ore is by far the most important mineral of this Colony. It is obtained chiefly from mines in Yorke’s Peninsula in South Australia proper.

Gold.—Compared with that of the other Australian Colonies, the output of gold is at present insignificant. Most of it comes from the Northern Territory.

TABLE 297.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

	Average Number of Persons Employed in and about the Mines during the years	
	1900.	1901.
South Australia proper	5,000†	5,750†
Northern Territory... ..	1,304	1,257
Total	6,304	7,007

It is estimated that 300 persons were employed at quarries in 1901.

* Official Return furnished by Department of Mines, Adelaide.—Government Resident’s Report on the Northern Territory for the Year 1900.—Statistical Registers for 1900 and 1901.

† Approximate.

AUSTRALIA.—SOUTH AUSTRALIA—*continued*.

TABLE 298.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Copper (exported)	4,886	4,964	371,920	6,770	6,879	468,606
Copper ore	2,805	2,850	36,621	2,348	2,386	31,471
Gold	ozs. 24,155*	kilos. 751	82,422	ozs. 27,490	kilos. 746	93,185
Gold ore and concentrates ...	—	—	—	5	5	175
Lead (exported)	382	388	4,382	(Not stated)	—	722
Manganese ore	—	—	—	132	134	330
Mica	—	—	1	—	—	—
Salt	33,425†	33,691	37,236	43,000	43,344	47,873
Silver lead ore... (exported)	1,861	1,891	18,046	1,514‡	1,538	12,067
Tin ore	17	17	774	82	83	5,583
Wolfram	9	9	440	5	5	(Not stated)
Unenumerated ore ...	—	—	441	—	—	1,753
Total value	—	—	552,283	—	—	661,765

TASMANIA§.

Tasmania is producing a little coal, but its importance at the present moment as a mineral country is due to its great deposits of the ores of copper, lead, gold, silver, and tin.

The Official Handbook of Tasmania contains|| a useful map showing the principal mineral districts.

Coal.—The output is at present insignificant.

Copper.—Mount Lyell Mine in the West Coast district is the great producer of copper, and the ore is made specially valuable by containing gold and silver. The Mount Lyell ore yielded 9,243 tons of blister copper in the year 1900–1901.

Gold.—In addition to the deposits of auriferous copper ore of Mount Lyell and its neighbours, there are numerous veins of gold-bearing quartz. The Tasmania Mine, Beaconsfield, still maintains its position as the premier gold mine of the State; it yielded 33,079 ozs. in the year 1900–1901.

Lead and Silver.—The Zeehan district boasts of many rich deposits of silver-bearing lead ore, and Tasmania is already producing very nearly as much lead ore as the United Kingdom.

Tin.—As in the case of its competitor Cornwall, it was tin ore which first drew special attention to the mineral wealth of the country. For many years tin was the principal mineral export of Tasmania; though still an important product, its value is now exceeded by that of the gold. Mount Bischoff continues to be one of the largest tin mines in the world.

* These figures have been taken from the Mining Statistics issued by the Department of Mines for Western Australia.

† Quantity exported.

‡ Estimated to contain 6,500 ozs. of fine silver.

§ Report of the Secretary for Mines, 1900–1901, Hobart, 1901; and Ministerial Statement of the Minister of Lands Works, Mines, and Railways, 1902. Hobart, 1902.

|| Launceston, 1899.

AUSTRALIA.—TASMANIA—continued.

TABLE 299.

PERSONS EMPLOYED at the MINES during the Years ended 30th June 1900-1901 and 1901-1902.

	1900-1901.	1901-1902.
	7,020	6,435

TABLE 300.

QUANTITY and VALUE of the MINERALS produced during the Years ended 30th June 1900-1901 and 1901-2.

Description of Mineral.	1900-1901.			1901-1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos	90	91	89	—	—	—
Coal	43,010	43,700	36,387	54,452	55,326	46,284
Copper (blister)	9,382	9,533	781,949	9,734*	9,890	675,312
" ore	11,572	11,758	153,584	8,724	8,864	91,290
Gold	ozs. 79,543	kilos. 2,474	306,500	ozs. 62,466	kilos. 1,943	290,876
Iron ore	2,772	2,816	3,517	1,769	1,797	1,002
Silver lead ore	24,327	24,717	263,792	32,883†	33,411	191,238
Tin ore	2,993	3,041	266,667	3,057	3,106	206,122
Zinc ore	18	18	620	—	—	—
Wolfram	—	—	—	1,023	1,039	3,247
Sundries	—	—	—	3,304	3,357	7,020
Total value	—	—	1,813,105	—	—	1,512,391

TABLE 301.

DEATHS from ACCIDENTS at MINES during the Years ended 30th June 1900-1901 and 1901-1902.‡

	1900-1901.		1901-1902.‡	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
	8	1.14		

* Estimated to contain 777,708 ozs. or 24,189 kilos of fine silver. Value of the gold contained in the blister copper has been deducted.

† Estimated to contain 3,233,495 ozs. or 100,573 kilos of fine silver, on the assumption that 98½ ozs. are contained in one ton of ore.

‡ Figures are not yet available.

AUSTRALIA—continued.

VICTORIA.*

Coal.—Victoria possesses large deposits of brown coal of Tertiary age. Up to the present time they have been little utilised.

Gold.—Victoria stands second among the Australian Colonies as a gold producer. It is true that the weight of its bar gold was less than that of Queensland; but it has already been pointed out that much of the gold from the latter colony has a comparatively low standard of fineness, so that when its output is reduced to fine gold it falls behind Victoria.

TABLE 302.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

		1900.	1901.
Coal ... ..	...	807	827
Gold ... ..	...	29,035	27,777
Other Mines ... ..	...	23	66
Total ... ..	...	29,865	28,670

TABLE 303.

QUANTITY and VALUE of the MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Brown coal	—	—	—	150	152	37
Building stone	—	—	35,000	—	—	45,000
Clays	—	—	9,000	—	—	11,500
Coal	211,596	214,882	101,599	209,329	212,888	147,191
Gold	ozs. 807,407	kilos. 25,113	3,229,628	ozs. 789,562	kilos. 24,558	3,102,753
Infusorial earth	—	—	—	300	305	1,500
Tin ore	71	72	5,017	77	78	4,181
Total value	—	—	3,380,244	—	—	3,312,162

* Annual Reports of the Secretary for Mines for Victoria for 1900 and 1901.

AUSTRALIA.—VICTORIA—continued.

TABLE 304.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.

Kind of Mines.	1900.		1901.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal	1	1·24	4	4·84
Gold	35	1·21	28	1·01
Total	36	1·21	32	1·12

WESTERN AUSTRALIA.*

A map of the Colony, prepared by Mr. Maitland, the Government Geologist, and pre-facing the Report of the Department of Mines, shows by coloured signs the distribution of the various useful minerals which have been discovered, viz.:—Antimony, asbestos, coal, cobalt, copper, diamonds, gold, graphite, iron, lead, mica, silver, and tin.

Coal.—The output of the only coalfield, that at Collie, remained almost stationary during the year 1901, the output being 574 tons less than in 1900.

Copper Ore.—It is stated that Western Australia is likely to become a large copper producer. The ores are being worked in the West Pilbarra Goldfield and in the Mount Margaret Goldfield; numerous other deposits are known to exist.

Gold.—The output of gold has increased by about 19 per cent. More than half the gold was produced by the East Coolgardie Field, with a total output of 991,369 ozs.; next in importance comes the Mount Margaret Field with 190,032 ozs. The Murchison and North Coolgardie Goldfields each produced somewhat more than 140,000 ozs. each.

Tin Ore.—The increase in the output of tin ore is largely due to the development of the resources of the Marble Bar tinfield in the Pilbarra Gold district. The Greenbushes tinfield in the southern part of the colony likewise shows an improvement.

TABLE 305.

PERSONS EMPLOYED at MINES and STREAM TIN WORKINGS during the Years 1900 and 1901.

Kind of Mines.	1900.			1901.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	296	104	400	279	104	383
Copper Ore	90	120	210	149	172	321
Diamonds	—	5	5	—	—	—
Gold	8,597	8,150	16,747	8,625	8,130	16,755
Lead Ore	4	4	8	—	2	2
Limestone	—	10	10	—	5	5
Tin	59	296	355	66	347†	413
Total	9,046	8,689	17,735	9,119	8,760	17,879

* Reports of the Department of Mines of Western Australia for the Years 1900 and 1901. Perth, 1901 and 1902. Maitland. "The Mineral Wealth of Western Australia." Geological Survey Bulletin No. 4, Perth, 1900.

† 249 of these persons were employed at Stream Tin Workings.

AUSTRALIA.—WESTERN AUSTRALIA—*continued.*

TABLE 306.

QUANTITY and VALUE of the MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	114,410	130,310	54,835	117,836	119,727	68,551
Copper ore	6,183	6,282	43,373	10,157	10,320	75,246
Gems (exported)	—	—	24	—	—	1,000
Gold	ons. 1,580,950	kilos. 49,173	6,007,610	ons. 1,879,391	kilos. 53,456	7,235,653
Ironstone for fluxing	12,351	12,448	9,253	20,569	20,899	12,246
Lead ore	263	279	533	9	9	100
Limestone	15,925	16,193	3,594	15,219	15,502	4,243
Mica (exported)	(Not stated)	—	—	—	—	—
Salt*	131	133	393	†	—	—
Silver (exported)	ons. 23,749	kilos. 894	2,594	ons. 60,869	kilos. 1,893	7,900
Tin ore (dressed)	333	336	54,702	734	746	40,000
Total value	—	—	6,180,219	—	—	7,445,772

TABLE 307.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.

Kind of Mines.	1900.						1901.					
	Number of Persons Killed.			Death-rate per 1,000 Persons Employed.			Number of Persons Killed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	—	—	—	—	—	—	—	—	—	—	—	—
Gold	36	9	45	4.19	1.10	2.69	42	3	45	4.87	.37	2.69
Other mines	—	—	—	—	—	—	—	—	—	—	—	—
Total for all mines	36	9	45	3.98	1.04	2.54	42	3	45	4.61	.37	2.52

Though the total number of persons employed at coal mines in Western Australia is under 400, an elaborate Act of Parliament was passed last year for their protection. It is entitled "The Coal Mines Regulation Act, 1902." It is evidently based upon the British Statute, but in some respects it is more drastic. For instance, it prohibits the employment of a person below ground for more than eight hours at a time or for more than 48 hours in a week.

Engine-drivers must obtain certificates of competency from a Board of Examiners.

* Produce of Rottnest Island only.
† Information not received.

AUSTRALIA.—WESTERN AUSTRALIA—*continued.*

The general rules are 55 in number. The rule relating to ventilation prescribes that the air supply shall be at least 100 cubic feet per minute for each man, boy, horse, or other animal.

If ladders are used for the ascent and descent of the persons employed, the distance between the platforms must not exceed 30 feet.

When naked lights are used all brattice cloth must be of a non-inflammable character.

The Governor in Council has power to suspend or alter the rules.

Special rules are compulsory for every mine.

There are also in force eleven Acts of Parliament relating to mining, and especially to gold mining.*

West Indies. (*See* BARBADOS, DOMINICA, REDONDA, SOMBRERO and TRINIDAD.

Bahamas.†

Ray salt is produced in the Bahamas by the solar evaporation of sea water. The principal producers are Inagua, Rum Cay, Long Cay, and Ragged Island. During the year 1901 the number of persons employed temporarily was about 423.

The output during the last two years has been as follows:—

TABLE 308.

Year.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£
1900	1,732	1,759	804
1901	3,090 (a)	3,140	1,398

(a) Output for 15 months ended 31st March 1902.

Barbados.‡

The most important mineral product of the island is "manjak," a variety of glance pitch occurring in veins which traverse deposits of infusorial earth. The quantity exported in 1901 was 1,044 tons, valued at £9,394.

There are now 19 petroleum wells, varying in depth from 60 to 1,000 ft., yielding 7,200 gallons annually, worth about £1,000.

Basutoland.

According to Sir Godfrey Lagden,§ "Coal crops out in several places in Basutoland and is used for local consumption. . . . There are indications of iron, copper, and tin."

* *Western Australia. Report of the Department of Mines (Preliminary) for the year 1901.* Perth, 1902, p. 29.

† Official Return furnished by the Colonial Secretary, Nassau; and Churchill "Bahamas." Report for 1901." *Colonial Reports*—Annual, No. 365.—London, 1902 [Cd. 788-35], p. 21.

‡ Hodgson, "Barbados. Report for 1901." *Colonial Reports*—Annual, No. 368.—London, 1902 [Cd. 788-38], pp. 15 and 16.

§ *Jour. R. Col. Inst.*, Vol. xxxii., 1901, p. 462.

Bechuanaland Protectorate.*

Little is known about the mineral wealth of this country ; though a small seam of good coal has been discovered close to the railway in the Northern Protectorate.

British Borneo.**LABUAN.**

Coal is worked in the island of Labuan, and its harbour is now an important coaling station.

The quantities † of coal exported in 1900 and 1901 were as follows :—

TABLE 309.

Year.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£
1900	35,368	35,935	Not stated.
1901	21,194	21,534	"

NORTH BORNEO.†

The existence of coal, copper, gold, and other minerals has been proved ; gold has from time immemorial been worked by the natives in the vicinity of Darvel Bay. Coal has been discovered in the vicinity of Cowie Harbour and Marudu Bay. At the former place preliminary working operations have commenced. A company called the British Borneo Syndicate, Ltd., has recently been formed to exploit the minerals of North Borneo. It has already sent a mineral oil expert to examine the oil fields of the West Coast, and other experts and prospectors are shortly to follow.

SARAWAK.‡

The known mineral resources of Sarawak are deposits of antimony ore, coal, diamonds, gold, and petroleum.

Antimony.—The Borneo Company has antimony works at Busoh in Upper Sarawak ; 200 tons of regulus of antimony were shipped in 1901.

Coal.—The Government works two coal mines, one at Sadong, the other at Brooketon ; the quantity exported in 1900 was 15,080 tons.

Diamonds.—The gems are found in very small quantities.

Gold.—Gold is being extracted from quartz. The mills at Bau and Bidi, belonging to the Borneo Company, Ltd., are now (1901) crushing between them about 15,000 tons a month, and all the gold is extracted by the cyanide process. The total output of the Borneo Company for the year 1901 was about 30,000 ozs. of fine gold.

* Newton, "Bechuanaland Protectorate Annual Reports for 1896-7." *Colonial Reports*—Annual, No. 226.—London, 1898 [C. 8650-24], p. 8.

† Information furnished by the British North Borneo Company.

‡ Consul Hewett, "Trade and Commerce of Sarawak for the Year 1900."—*Dipl. and Cons. Reports*, No. 2711, Ann. Ser., 1901 d. 786-15], p. 9, information furnished by the Borneo Co., Ltd., and *The Sarawak Gazette*, Vol. xxxi., 1901, p. 78.

British Central Africa Protectorate.*

Promising auriferous quartz reefs have been discovered near the Loangwa River.

British Columbia. (See under CANADA.)**British Guiana.†**

Diamonds.—It has now been definitely proved that diamonds of good quality exist in nearly all the gold-bearing districts of British Guiana, and great activity is being shown in this new industry; during the past year 91,206 stones weighing 8,227 carats were exported.

Gold.—The alluvial deposits of gold continue to be worked successfully, though the output shows a decrease of 12,770 ozs. for the year.

Machinery for working gold by the hydraulic method has been erected at Omai on the Essequibo River; the results are awaited with anxiety, for if they prove successful the output of gold will be largely increased, and a new field of operation will be presented to the miner.

A dredge is at work in the Barima River; but up to the present no definite results have been reported, though it is known gold has been obtained in some quantity.

TABLE 310.

PERSONS EMPLOYED at MINES, ALLUVIAL WORKINGS, and QUARRIES during the Years 1900-1901 and 1901-1902.

Kind of Workings.					1900-1901.	1901-1902.
Mines and Alluvial or Placer Diggings ...					5,530 (a)	13,558 (a)
Granite Quarries					86 (a)	44 (a)

(a) Approximate figures.

TABLE 311.

QUANTITY and VALUE of the MINERALS produced in 1900-1901 and 1901-1902.

Mineral.	Financial Year 1900-1901.			Financial Year 1901-1902.		
	Quantity.		Value.	Quantity.		Value.
Gold	Ozs.	Kilos.	£	Ozs.	Kilos.	£
	114,102	3,549	409,968	101,332	3,152	369,450
Granite	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
	5,299	5,384	9,538	3,496	3,552	1,665
Total value	—	—	419,506	—	—	371,115

* Commissioner Sharpe, "Trade and General Condition of British Central Africa Protectorate for the Year 1901-1902."—*Dipl. and Cons. Reports*, No. 2872, Ann. Ser., 1902 [Cd. 786-176], p. 16.

† Official Return furnished by the Department of Lands and Mines, Georgetown: *British Guiana. Report of the Commissioner of Mines for the year 1901-1902.* Georgetown, Demerara, 1902.

BRITISH GUIANA—continued.

The table below shows the output of the principal districts :—

TABLE 312.
Gold obtained.

District.	Financial Year 1900-1901.				Financial Year 1901-1902.			
	Ozs.				Ozs.			
Barima	17,356	...	...	16,199
Cuyuni	23,473	...	...	22,457
Essequibo	17,476	...	...	12,317
Potaro	26,563	...	...	25,403
Other districts	29,234	...	...	24,956
Total output in ozs.	114,102	...	...	101,332
" " kil.	3,549	...	...	3,152

TABLE 313.
DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1900-1901
and 1901-1902.

Kind of Workings.	1900-1901.		1901-1902.	
	Persons Killed.	Death-rate per 1,000 Persons employed.	Persons Killed.	Death-rate per 1,000 Persons employed.
Gold mines	6	1.08	6	.44
Alluvial or Placer diggings ...				
Granite quarries	—	—	—	—

British New Guinea.*

Many parts of British New Guinea are gold-bearing, but it is not likely that any large quantities of gold will be produced until the country has become more civilized. Nearly all the gold is obtained from alluvial deposits; following the example of other colonies, it is proposed to introduce dredging machinery for the purpose of working some of the river beds.

TABLE 314.

Year.	Gold exported.		Value.
	Ozs.	Kil.	
1899-1900	9,256	288	£ 32,478
1900-1901†	9188	286	32,646

* Annual Reports on British New Guinea for 1901.

† Figure taken from the Report of the Department of Mines for Western Australia for 1901, Perth, p. 11.

British Solomon Islands.*

Copper ore is known to exist in the Island of Rendova, and a concession has been granted for working sulphur in the Island of Vella Lavella.

Canada.†

Asbestos.—The Canadian asbestos, which mineralogically is chrysotile, occurs in small veins in serpentine in the Eastern Townships of the province of Quebec, and at Denholme mine north of Ottawa.

Chromic Iron Ore.—This ore is obtained from irregular pockets in the serpentine in the Eastern Townships of the province of Quebec.

Coal.—The coalfields, which have been most largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent, bituminous coal is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, and Springhill coalfields, in Nova Scotia. New Brunswick has a small area of thin seams of bituminous coal. The coal of the Pacific coast, generally bituminous, is of Cretaceous age, and is derived from collieries at Nanaimo, Wellington, and Comox, in Vancouver Island. Anthracite and bituminous coal occur in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams occurring near Cochrane improve in quality, and yield bituminous coal. Further west again is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of the Rocky Mountains, where the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal and semi-anthracite have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel is now being worked on a large scale. All these coals are of Cretaceous age.

In 1901 Nova Scotia produced 65.6 per cent. of the Dominion's output of coal, British Columbia 26.4 per cent., and the North-West Territories, together with New Brunswick, 8.0 per cent.

Copper.—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec, the first-named being by far the most important. Its output increased very largely last year owing to the yield of the mines in the Kettle River, Grand Forks, and Osoyoos Mining Divisions, which lie upon the border of the United States. This "Boundary" district, as it is called, produced more than half the total output of the Province, which last year was reckoned to be 12,323 tons of fine copper.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the east for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metals are extracted.

Emery.—In the year 1897 large deposits of corundum were discovered near Raglan, in the counties of Hastings and Renfrew, in Eastern Ontario; the mineral is now being worked on a large scale for the purpose of making emery wheels, and Ontario is becoming one of the greatest corundum-producing countries in the world.

Gold.—At the present time the chief gold-producing provinces of the Dominion are the Yukon region of the North-West Territories, British Columbia, Nova Scotia, and Ontario.

The Yukon region, with the great Klondike gold field, produced about two-thirds of Canada's output; but the yield of 870,827 ozs. shows a falling off of 19 per cent. compared with that of the previous year.

* Woodford, "British Solomon Islands Annual Report for 1901-02." *Colonial Reports*, Annual, No. 372 [Cd. 788-42]. London, 1902, p. 16.

† *Reports of the Division of Mineral Statistics and Mines of Canada for the years 1900 and 1901.*

CANADA—continued.

Next in importance is British Columbia, with a yield of 258,889 ozs. of gold in 1901, of which 48,505 ozs. were obtained from alluvial deposits and 210,384 ozs. from lodes. The most important alluvial or placer district is Cariboo, which was famous even so long ago as 1859. Most of the lode gold is extracted by smelting auriferous copper ores in the Rossland, Nelson, and "Boundary" districts, and some by amalgamation and concentration.

The gold of Nova Scotia is derived from free-milling quartz veins, and it is encouraging to note that the production of the province is increasing.

Ontario is not yet producing a large quantity of gold, though the labours of prospectors have proved the existence of auriferous veins over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east. The output from various stamp mills affords good grounds for believing that gold mining will become an important industry in Ontario.

Granite and Miscellaneous Building Stones.—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

Graphite.—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks. The greater part of the graphite raised in 1899 came from Black Donald Mine, Renfrew County, Ontario.

Gypsum.—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occurs in the form of spotlessly white alabaster. A small amount of gypsum is being mined in Ontario.

Iron Ore.—The output of iron ore is increasing, owing to the working of a large mine at Michipicoten, in Ontario; part is smelted in the province and part is exported to the United States.

Lead Ore.—The mineral resources of British Columbia are by no means confined to gold. This province is a large producer of argentiferous lead ore, which is obtained especially in the East and West Kootenay districts. Owing to lower prices obtainable for the ore the output declined in 1901.

Mercury.—A little cinnabar was obtained in 1895, 1896, and 1897 from mines near Kamloops Lake, in British Columbia.

Mica.—This mineral is beginning to be mined more extensively in various places. The phlogopite and biotite varieties are obtained in the provinces of Ontario and Quebec, in the district about Ottawa, whilst transparent muscovite of excellent quality comes from Tête Jaune Cache, in British Columbia.

Natural Gas.—The Lower Silurian rocks, when buried, yield areas containing natural gas in a few places, such as at Port Colborne and Kingsville, in Southern Ontario. The natural gas which occurs in the North-West Territories has been little utilized at present.

Nickel.—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The output of nickel in 1900 was about five times that of the year 1890.

Ochre.—The most important ochre deposits are near Three Rivers, Champlain County, Quebec.

Petroleum.—The only district where petroleum is being produced at the present time is in Southern Ontario.

Phosphate of Lime.—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from the United States, prices have dropped, and practically none of the Canadian apatite mines are being worked as such. The phosphate appearing in the statistics was obtained as a by-product in mining for mica, or from the old waste heaps of abandoned workings.

Platinum.—A small quantity of platinum was produced in the Similkameen district.

Salt.—Thick beds of salt occur in Southern Ontario, in the Onondago division of the Silurian rocks. The brine is pumped up and evaporated.

CANADA—continued.

Silver.—The lead ores of British Columbia are often highly argentiferous.

The rich silver ores in the Thunder Bay district of the province of Ontario are not being largely worked at the present time.

Slate.—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.

TABLE 315.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1900 and 1901.*

Mineral or other product.	1900.†			1901.‡		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Actinolite ...	—	—	—	474	482	642
Arsenic ...	271	275	4,670	621	631	8,564
Asbestos ...	26,019	26,437	153,787	33,999	34,545	243,788
Baryta ...	1,194	1,213	1,563	583	592	789
Coal ...	5,007,737	5,088,099	2,730,910	5,523,470	5,612,108	3,014,615
Coke ...	140,298	142,549	133,385	333,594	338,947	259,800
Copper (fine, contained in ore).	8,454	8,590	629,984	18,282	18,575	1,356,186
Corundum ...	3	3	62	388	394	10,914
Felspar ...	284	289	228	4,666	4,741	968
Fireclay ...	1,112	1,130	849	3,553	3,610	1,216
Flagstones ...	—	—	1,079	—	—	—
Gold (fine) ...	ozs. 1,350,176§	kil. 41,995	5,734,553	ozs. 1,183,282§	kil. 36,804	5,026,485
Granite ...	—	—	16,438	—	—	31,849
Graphite ...	1,716	1,744	6,378	1,286	1,307	5,934
Gravel and Sand ...	176,391	179,222	20,890	176,162	178,989	24,137
Grindstones ...	4,946	5,025	10,983	5,090	5,172	11,443
Gypsum ...	225,090	228,702	53,221	262,321	266,531	69,893
Iron ore ...	4,935	5,014	2,776	273,392	277,779	156,634
" chromic ...	2,085	2,118	5,548	1,571	1,596	5,228
Iron (pig) ...	31,596	32,103	119,827	74,196	75,387	249,064
Lead ...	28,201	28,654	567,230	22,659	23,023	452,010
Limestone for flux in smelting iron ore.	47,291	48,050	8,082	151,249	153,876	37,636
Manganese ore ...	27	27	370	393||	399	990
Mica ...	—	—	34,110	—	—	32,877
Mineral water ...	—	—	15,411	—	—	20,548
Natural gas ...	—	—	85,704	—	—	64,183
Nickel ...	3,161	3,212	683,776	4,102	4,168	944,080
Ochres ...	1,755	1,783	3,164	1,994	2,026	8,439
Peat ...	357	363	247	196	199	136
Petroleum ...	galls. 24,867,430	litres 112,984,124	236,508	galls. 20,598,480	litres 93,588,329	195,907
Phosphate of lime ...	1,263	1,283	1,460	—	—	—
Pyrites (Copper and Iron).	35,742	36,316	31,883	25,233	25,638	23,228
Salt ...	55,406	56,295	57,423	53,061	53,913	53,908
Sand (moulding) ...	5,519	5,608	2,531	13,054	13,263	6,008
Silver (fine) ...	ozs. 4,468,225	kilos. 138,977	563,088	ozs. 5,078,318	kilos. 157,953	615,137
Slate ...	—	—	2,486	—	—	2,051
Soapstone ...	375	381	280	—	—	—
Talc ...	893	907	1,027	231	235	173
Tripolite ...	300	305	401	—	—	—
Zinc ...	95	97	1,920	—	—	—
Building materials:—						
Bricks ...	—	—	—	—	—	—
Building stone ...	—	—	—	—	—	—
Cement, natural ...	—	—	—	—	—	—
" Portland ...	—	—	—	—	—	—
Lime ...	—	—	1,265,093	—	—	1,269,620
Pottery ...	—	—	—	—	—	—
Sewer pipe ...	—	—	—	—	—	—
Terra cotta ...	—	—	—	—	—	—
Tiles ...	—	—	—	—	—	—
Total value ...	—	—	13,189,325	—	—	14,200,075

The progress of Canada as a mineral-producing country still continues; the total value of its metallic and non-metallic products in 1901 exceeded 14 millions sterling, which is more than three times what it was 10 years ago.

* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1900 and 1901.

† Revised figures.

‡ Preliminary Return, subject to revision.

§ Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

|| Quantity exported.

CANADA—continued.

In 1901 gold contributed 35.24 per cent. of the total value ; coal, 22.96 per cent. ; copper, 9.51 per cent. ; nickel, 6.62 per cent. ; silver, 4.31.

The mining industries of some of the provinces of the Dominion are sufficiently important to deserve separate tables.

BRITISH COLUMBIA.*

TABLE 316.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

KIND OF MINES.	1900.			1901.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	3,186	910	4,096	3,041	933	3,974
Metalliferous ...	2,430†	1,309†	3,739†	2,736†	1,212†	3,948†
Total	5,616	2,219	7,835	5,777	2,145	7,922

TABLE 317.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal	1,439,595	1,462,697	887,422	1,460,331	1,483,766	900,204
Coke	85,149	86,515	87,482	127,081	129,120	130,563
Copper	4,463	4,535	331,909	12,323	12,521	913,760
Gold, Alluvial... ..	ozs. 63,936	kilos. 1,989	262,752	ozs. 48,505	kilos. 1,509	199,336
" from veins, &c. ...	ozs. 167,153	kilos. 5,199	709,599	ozs. 210,384	kilos. 6,544	893,549
Lead	28,285	28,739	553,128	23,028	23,398	411,521
Silver	ozs. 3,958,175	kilos. 123,113	474,493	ozs. 5,151,333	kilos. 160,225	592,756
Other minerals	—	—	51,727	—	—	85,734
Total value	—	—	3,358,512	—	—	4,127,423

TABLE 318.

DEATHS from ACCIDENTS at COAL MINES during the Years 1900 and 1901.

Cause of Accident.	No. of Persons Killed.	
	1900.	1901.
<i>Underground:</i>		
Falls of coal	2	6
" rock	6	6
Explosion of gas	—	66
Crushed by cars	4	3
Blasting	1	—
Hoisting, ropes, &c....	1	—
Fire	—	19
<i>Surface:</i>		
Railways	—	—
Miscellaneous	3	2
Total	17	102

* Annual Reports of the Minister of Mines for British Columbia for 1900 and 1901. Victoria.

† The figures relate to Mines shipping ores.

CANADA.—BRITISH COLUMBIA—*continued.*

During the year 1901 there were 13 fatal accidents at metalliferous mines, causing 14 deaths.

TABLE 319.
DEATH-RATE FROM ACCIDENTS at MINES during the Years 1900 and 1901.

KIND OF MINES.	1900.			1901.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	4.39	3.30	4.15	32.88	2.15	25.67
Metalliferous ...	—	—	3.48*	—	—	3.55*

The terribly high mortality rate recorded in Table 319 is due to three bad disasters in the Vancouver coal mines, viz., an explosion and two underground fires. The explosion happened at Union Colliery and resulted in 64 deaths; the cause remains undetermined. Sixteen persons were shut in by a fire at Wellington (Extension) Mine and perished. It is supposed that the fire originated from some brattice cloth being ignited. The second fire caused three deaths.

NOVA SCOTIA.†

TABLE 320.
PERSONS EMPLOYED at COAL MINES during the Years ended 30th September 1900 and 1901.

Year.	Under-ground.			Above-ground.			Construction.			Total.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1900	3,949	593	4,542	1,494	201	1,695	386	3	389	6,626
1901	5,064	580	5,644	1,750	212	1,962	57	—	57	7,663

The average numbers of persons employed at gold mines during the years ending 30th September 1900 and 1901 were 537 and 888 respectively.

TABLE 321.
QUANTITY of MINERALS produced during the Years ended 30th September 1900 and 1901.

Mineral.	Year ended 30th September 1900.		Year ended 30th September 1901.	
	Quantity.‡		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Barytes	699	710	536	545
Coal	3,238,245	3,290,211	3,625,365	3,683,543
Coke	62,000	62,995	120,000	121,926
Copper ore	536	545	—	—
Gold	ozs. 30,399	kilos. 945	ozs. 30,537	kilos. 950
Gypsum (exported) ...	122,281	124,243	135,637	137,814
Iron ore	13,846	14,068	16,071	16,329
Limestone	50,000	50,802	95,794	97,331
Manganese ore	8	8	10	10
Tripoli and Silica ...	982	998	714	725

* Calculated on the number of persons employed at mines shipping ore.

† Reports of the Department of Mines for Nova Scotia, 1900 and 1901, Halifax.

‡ Revised figures.

CANADA.—NOVA SCOTIA—continued.

TABLE 322.

DEATHS from ACCIDENTS at MINES during the Years ended 30th September 1900 and 1901.

	Year.	Kind of Mines.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
1900 ...	{	Coal	22	3.32
		Gold	—	—
1901 ...	{	Coal	14	1.83
		Gold	1	1.13

ONTARIO.*

TABLE 323.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1900 and 1901.

	Kind of Working.	1900.	1901.
	Copper and nickel	1,444	2,284
	Gold and arsenic	750	585
	Iron ore	439	360
	Mica	133	83
	Silver	50	65
	Other workings	8,118	8,458
	Total	10,934	11,835

TABLE 324.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.

Mineral or other Product.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Actinolite	—	—	—	465	472	642
Arsenic... ..	271	275	4,670	620	630	8,564
Calcium carbide	897	911	12,390	2,474	2,514	34,683
Copper	3,004	3,052	65,688	4,051	4,116	121,044
Felspar	3,571	3,628	1,927	4,554	4,627	1,310
Gold	ozs. 18,767	kilos. 584	61,204	ozs. 14,293	kilos. 445	50,228
Graphite	1,609	1,635	5,554	893	907	4,110
Gypsum	978	994	3,709	1,387	1,409	2,753
Iron ore	80,627	81,921	22,974	244,230	248,149	35,841
Iron pyrites	—	—	—	6,250	6,350	3,596
Mica	574	583	18,853	382	388	8,174
Natural gas	—	—	80,717	—	—	70,312
Nickel	3,161	3,212	155,471	3,965	4,029	382,186
Petroleum (crude)	galls. 23,381,783	litres 106,234,149	384,050†	galls. 21,433,500	litres 97,352,207	301,632†
Salt	59,454	60,408	66,673	53,863	54,727	66,382
Silver	ozs. 160,612	kilos. 4,995	19,801	ozs. 151,400	4,709	17,431
Talc	893	907	1,027	357	363	288
Zinc ore	446	453	103	1,339	1,360	3,082
Building materials :—						
Bricks, tiles, pipes, &c.	—	—	414,818	—	—	461,327
Building stone, &c.	—	—	133,632	—	—	174,658
Cement, Portland	barrels 306,726	—	122,881	barrels 350,660	—	115,737
" rock	" 125,428	—	20,547	" 139,628	—	22,115
Lime "	bushels 3,893,000	decalitres 14,150,144	111,781	bushels 4,100,000	decalitres 14,902,541	113,014
Total value	—	—	1,707,570	—	—	1,999,109

* Reports of the Bureau of Mines for Ontario for 1900 and 1901, Toronto.

† Value of illuminating and lubricating oils, benzene, naphtha, gas and fuel oils, tar, paraffin wax and candles made from the crude oil ; value of crude oil not stated.

CANADA.—ONTARIO—continued.

TABLE 325.

NUMBER of DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.

Kind of Mine.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1900.	1901.	1900.	1901.
Copper	7	8	4.85	} 3.94
Nickel	—	1	—	
Gold	10	—	13.33	—
Iron	—	3	—	8.33
Mica	—	1	—	12.05

QUEBEC.*

This Province employed in 1901 about 5,000 persons in mining and quarrying, of whom nearly one-third were engaged in getting asbestos, the most important mineral.

TABLE 326.

OUTPUT and VALUE of MINERALS during the Years 1900 and 1901.

Mineral.	1900			1901.		
	Statute Tons.	Metric Tons.	Value.	Statute Tons.	Metric Tons.	Value.
Asbestos	26,199	26,619	\$ 151,102	35,979	36,550	\$ 263,924
Barytes	411	417	662	476	484	611
Cement	barrels 22,100	—	7,514	barrels 8,000	—	5,758
Chrome iron	2,068	2,101	17,147	1,137	1,155	3,441
Copper ore	33,742	34,283	30,853	18,121	18,412	25,993
Felspar	131	133	91	375	381	261
Flagstones	sq. yds. 4,000	sq. metres 3,344	719	sq. yds. 3,000	sq. metres 2,508	555
Gold	—	—	—	ozs. 80	kilos. 2	296
Granite	—	—	—	—	—	30,000
Graphite	358	364	1,945	75	76	964
Iron ores	18,736	19,037	7,859	13,829	14,051	6,365
Lead ore	286	290	17,955	203	206	1,906
Mica	433	440	33,616	126	128	8,137
Ochre	1,055	1,072	1,911	1,119	1,137	2,999
Phosphate	1,223	1,243	1,829	922	937	1,290
Slate	817	830	2,082	squares 6,400	—	2,518
Building materials...	—	—	20,871	—	—	20,871
Total value	—	—	296,156	—	—	375,884

There were seven deaths from accidents at mines and quarries reported during the year 1901, these deaths are at the rate of 1.4 per thousand persons employed.

* Obalaki, *Reports on the Mines of the Province of Quebec for the years 1900 and 1901*, Department of Colonization and Mines, Quebec, 1901 and 1902.

Cape Colony.*

Though the diamond industry overshadows all other kinds of mining in the Colony, the extraction of coal is gradually assuming more importance, whilst copper ore has long been a notable article of export.

Asbestos.—This mineral occurs in the form of narrow veins, from one to five inches wide, in a dark shale at Westerberg, in the Prieska district, and Koegas, in the Hay district

Coal.—Outcrops of coal have been discovered at various points along the plateau lying between the Drakensberg range and the Matiwane Mountains, and along the southern slopes of those mountains, between the Kei and Umzimkulu rivers; the seams are mostly thin. As shown by Table 328, the total output of coal was 205,810 tons in 1901. Of this amount, Indwe produced 129,819 tons; the rest came from collieries at Cyphergat, Sterkstroom, Molteno, &c.

Copper Ore.—Namaqualand produces all the copper ore; apparently the copper mines are not under official inspection.

Crocidolite.—Small quantities of this mineral, which is used for ornaments and as a jewel, are obtained in the district of Hay and other places.

Diamonds.—The gems are obtained mainly from open and underground workings in the solid rock near Kimberley, and to a small extent from alluvial diggings. The three principal mines worked at the present time are De Beers, Kimberley, and Premier (Wesselton).

In addition to the Kimberley mines, there are a few unimportant diamond mines in the Barkly West Division, besides alluvial diggings.

Gold.—A small quantity of gold is obtained from Millwood in the Knysna division.

Salt.—Salt pans are found in 18 divisions of the Colony.

TABLE 327.

PERSONS EMPLOYED † during the Years 1900 and 1901.

Class of Mine.	Under-ground.‡			Above-ground.‡			Total for 1901.			Total for 1900.
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.	
Coal ...							128	2,460	2,588	3,457§
Copper Ore...							302	1,724	2,026	1,966
Diamond ...							2,085	9,145	11,230||	9,222‡

* *Statistical Registers for 1900 and 1901, Cape Town, and Report of the Inspector of Mines for Kimberley, &c., for 1900, Cape Town.*

† Exclusive of a few persons employed in getting asbestos and salt.

‡ Details not yet available.

§ 309 of these persons were females employed above-ground.

|| These figures relate to Kimberley mines only.

CAPE COLONY—continued.

TABLE 328.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos (exported)	155	157	2,557	88	89	1,433
Coal	198,451	201,636	152,581	205,810	209,113	180,413
Copper ore	42,678	43,363	562,115*	45,356	46,084	613,739
Crocidolite (exported)	5	5	500	3	3	150
Diamonds	carats 1,844,341	kilos. 378	3,365,994	carats 2,781,385	kilos. 571	5,387,955
Fireclay	1,090	1,107	Not stated.	900	914	Not stated.
Gold	ozs. 126	kilos. 4	492	ozs. 78	kilos. 2	302
Salt, white	bushels 434,695 tons 11,646†	11,833	31,660*	Not stated.	—	Not stated.
Total value	—	—	4,115,899	—	—	6,183,992

TABLE 329.

DEATHS from ACCIDENTS at COAL and DIAMOND MINES during the Year 1901.

Class of Mine.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	†	†	4	†	†	1·55
Diamond (Kimberley Mines)	†	†	36	†	†	3·21
Total for Coal and Diamond Mines for 1901.	†	†	40	†	†	2·89
Total for preceding year...	16	16	32	3·03	2·16	2·52

Kimberley Diamond Mines. §

TABLE 330.

PERSONS EMPLOYED during the Years 1900 and 1901.

Year.	Under-ground.			Above-ground.			Total.		
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total
1900 ...	347	2,274	2,621	1,510	5,091	6,601	1,857	7,365	9,222
1901 ...	†	†	†	†	†	†	2,085	9,145	11,230

* Estimated on the export value.

† Estimated at 60 lbs. = 1 bushel.

‡ Details not yet available.

§ Report of the Inspector of Mines for Kimberley, &c., for 1900, Cape Town, and Statistical Register for 1901, Cape Town.

CAPE COLONY—continued.

Kimberley Diamond Mines—continued.

TABLE 331.

DEATHS from ACCIDENTS during the Years 1900 and 1901.

Year.	Place.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
1900 ...	Under-ground ...	1	7	8	3·84	4·10	4·07
	Above-ground ...	1	12	13	·88	3·14	2·62
	Total... ..	2	19	21	1·44	3·44	3·04
1901 ...	Under-ground ...	•	•	•	•	•	•
	Above-ground ...	•	•	•	•	•	•
	Total... ..	•	•	36	•	•	3·21

TABLE 332.

CAUSES of ACCIDENTS in 1900.

Cause of Accident,	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Falls of ground	18	—	4	4	—	14	14
Falling down “ passes ”	2	—	1	1	—	1	1
Falls from ladder	1	—	—	—	—	1	1
Whilst ascending or descending shafts by machinery.	2	—	1	1	—	1	1
On tramways or by trucks	2	—	—	—	—	2	2
Ground falling down shaft	1	—	—	—	—	1	1
Timber falling down shaft	1	—	—	—	—	1	1
Falling down shafts	2	—	1	1	1	—	1
Blasting	3	1	—	1	—	2	2
Total	32	1	7	8	1	23	24

* Details not yet available.

CAPE COLONY—continued.

Kimberley Diamond Mines—continued.

Table 332—continued.

CAUSES of ACCIDENTS in 1900—continued.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Surface and Open Works.</i>							
Falls of ground and débris ...	16	—	6	6	—	13	13
On tramways or by trucks ...	28	1	3	4	2	24	26
Falling from face of open works...	2	—	1	1	—	1	1
Machinery	3	—	2	2	—	1	1
Blasting	3	—	—	—	1	2	3
Miscellaneous	2	—	—	—	2	—	2
Total	54	1	12	13	5	41	46
Totals (under and above ground)	86	2	19	21	6	64	70

CAUSES of ACCIDENTS in 1901.

Cause of Accident.	Number of Separate Accidents.*	Number of Persons Killed.*			Number of Persons Injured.*		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes							
Falls of ground							
Falling down "passes"							
Machinery							
Falls from ladders... ..							
Ignition of gas							
Ground falling from side of shaft							
On tramways or by trucks ...							
Blasting							
Miscellaneous							
Total under-ground ...							
<i>Surface and Open Works.</i>							
Falling down open works ...							
Falls of ground and débris ...							
On tramways or by trucks ...							
Machinery							
Blasting							
Miscellaneous							
Total							
Totals (under and above ground)				36			

* Details not yet available.

Ceylon.*

Gems.—The diggings at Ratnapura for precious stones, such as rubies, sapphires, spinels, chrysoberyls, garnets, zircons, and moonstones, are not very important.

Graphite.—Plumbago or graphite is the most important mineral produced in Ceylon; it occurs in gneiss and mica schist, and the workings are sometimes carried on to a depth of from 150 to 200 yards.

Salt.—This is obtained from salt lagoons or "pans," and the manufacture is a Government monopoly.

Stone.—"Cabook" is a local name for laterite, the most useful building stone in the island.

TABLE 333.

PERSONS EMPLOYED† at MINES and MINERAL WORKINGS during the Years 1899 and 1900.

Kind of Workings.	Under-ground.			Above-ground.			Total Number of Persons Employed in Mines and Mineral Workings.
	Males.	Females.	Total.	Males.	Females.	Total.	
Mines	26,625	43	26,668	44,460	6,654	51,114	77,782
Mineral Workings other than Mines.	28,946	10,448	39,354	26,712	16,955	43,667	83,021
Total for 1900 ...	55,531	10,491	66,022	71,172	23,609	94,781	160,803†
Total for preceding year.	36,963	3,273	40,236	134,045	15,649	149,694	189,930†

TABLE 334.

QUANTITY and VALUE of the MINERALS produced during the Years 1900 and 1901.‡

Mineral.	1900.			1901.‡		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coral	16,073	16,331	1,213	—	—	—
Rubble stone	235,620	239,401	15,149	—	—	—
Grinding stones	—	—	—	—	—	—
Mica	—	—	—	—	—	—
Plumbago	18,865	19,168	177,038	22,348§	22,707	640,643
Precious stones and pearls ...	—	—	4,867	—	—	—
Salt	10,905	11,080	3,180	—	—	—
Stone:— "Cabook"	Not stated.	—	3,393	—	—	—
Gneiss	4,487	4,559	40	—	—	—
Granite	343,093	348,599	39,892	—	—	—
Gravel	102,084	103,722	2,183	—	—	—
Total value	—	—	246,955	—	—	‡

* Official Return furnished by the Government of Ceylon.

† The numbers in this official return must not be taken to represent the numbers *continuously* employed in the industry; they probably include very many persons who worked at plumbago mining or cleaning for a few weeks only in the year.

‡ Figures, other than the exports of plumbago, for 1901 are not yet available.

§ Theburn "Ceylon Report for 1901." *Colonial Report*, Annual, No. 367 [Cd. 788-37], London, 1902, p. 20.

TABLE 335.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS during the Years
1899 and 1900.

Kind of Workings.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	12	—	12	1	—	1	13	·45	—	·17
Openworks...	—	—	—	3	2	5	5	—	·11	·06
Total for 1900.	12	—	12	4	2	6	18	·18	·06	·11
Total for pre- ceding year.	22	1	23	7	—	7	30	·57	·05	·16

Channel Islands.

The average number of persons employed each year in the stone quarrying industry of the Channel Islands is about 1,200.

TABLE 336.

QUANTITY and VALUE of STONE exported during the Years 1900 and 1901.*

Mineral and Islands where obtained.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
Guernsey and Jersey :	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Stone, dressed or rough (exported).	344,054	349,575	196,631	366,817	372,704	201,619

Christmas Island.†

This island possesses deposits of phosphate of lime which are rich enough to be of economic value. The phosphatic rock now being worked on a large scale is, in part at all events, a limestone altered into phosphorite by the percolation from overlying guano. Between five and six hundred persons are employed by the Phosphate Company, and the shipments for 1900 are estimated at 37,000 tons.

* Annual Statement of Trade of the United Kingdom for 1901, p. 278.

† Clayton "Christmas Island Report for 1900." Colonial Report, Annual, No. 319 [Cd. 431-11], London, 1901.

Cyprus.*

Copper.—This is obtained from the ancient copper mine at Lymni, in Papho.

Gypsum.—As shown by the table, gypsum is of some importance.

Salt.—The value of the salt obtained by allowing sea water to evaporate under the action of the sun's rays amounted to £4,902.

Umber.—"Terra umbra" has long been known as a product of Cyprus.

In addition to these minerals, sandstone and limestone are quarried for building and other purposes; but the quantities are unknown.

TABLE 337.

QUANTITY and VALUE of the MINERALS produced during the Years 1899 and 1900.

Minerals.	1899.		1900.	
	Quantity.		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Copper (exported)	35	36	12	12
Gypsum "	5,509	5,597	5,288	5,373
Salt (collected) ...	3,125	3,175	3,560	3,617
Umber (exported)	3,241	3,293	2,122	2,156
Total value ...	—	—	—	—
		£		£
		1,273		605
		2,671		2,661
		4,303		4,902
		1,673		1,089
		9,920		9,257

Federated Malay States.†

Gold.—Pahang has several mines which are working quartz veins; by far the most important is the Raub Concession, which has increased its output from 12,477 ozs. of gold in 1900 to 18,901 ozs. in 1901.

Marble.—A marble quarry is being worked at Ipoh, in Perak.

Tin.—The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The ore is obtained almost exclusively from alluvial deposits, worked partly by the open quarry method and partly by true underground mining.

The output of Perak rose a little in 1901, and the total quantity of metallic tin exported was 22,920 tons against 21,166 tons in 1900.

Hydraulic mining has been largely introduced for the purpose of working tin deposits in the Kinta district of Perak, and near Seremban in Negri Sembilan. There were 11 monitors at work in Perak in 1901, and this number is likely soon to be doubled.

A certain amount of vein mining is being carried on, and it is said that dredging the river beds will be tried before long.

The total number of coolies employed at the mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1901 amounted to 162,577.

TABLE 338.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

State.	1900.	1901.
Negri Sembilan	21,459	20,000
Pahang	7,578	8,400
Perak	70,963	63,079
Selangor	68,000	71,098
Total	168,000	162,577

* Blue Books for Cyprus for 1899-1900 and 1900-01.

† Official Return furnished by the Mines Department, Seremban, Negri Sembilan. Reports on the Federated Malay States [Cd. 1297], London, 1902.

FEDERATED MALAY STATES—*continued.*

TABLE 339.

SUMMARY of QUANTITY and VALUE of MINERALS produced in the four States during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	<i>Metric Tons.</i>	£	Statute Tons.	<i>Metric Tons.</i>	£
Gold	ozs. 17,048	<i>kilos. 530</i>	65,229	ozs. 23,948	<i>kilos. 745</i>	77,831
Tin*	42,442	43,123	5,500,000	46,960	47,714	5,106,900

TABLE 340.

NEGRI SEMBILAN.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	<i>Metric Tons.</i>	£	Statute Tons.	<i>Metric Tons.</i>	£
Tin*	4,300	4,369	557,231	4,478	4,550	486,982

TABLE 341.

PAHANG.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	<i>Metric Tons.</i>	£	Statute Tons.	<i>Metric Tons.</i>	£
Gold	ozs. 17,048	<i>kilos. 530</i>	65,229	ozs. 23,948	<i>kilos. 745</i>	77,831
Tin*	985	950	121,165	1,566	1,591	170,302

TABLE 342.

PERAK.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	<i>Metric Tons.</i>	£	Statute Tons.	<i>Metric Tons.</i>	£
Tin*	21,166	21,506	2,742,873	22,920	23,288	2,492,550

* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

FEDERATED MALAY STATES—continued.

TABLE 343.

SELANGOR.

Mineral.	1900.			1901.		
	Quantity		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin*	16,041	16,298	2,078,731	18,010	18,299	1,958,587

TABLE 344.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.

State.	Number of persons killed.		Death-rate per 1,000 persons employed.	
	1900.	1901.	1900.	1901.
Negri Sembilan	5	†	·23	†
Pahang	9	7	1·19	·83
Perak	†	†	†	†
Selangor... ..	24	14	·35	·20
Total	38†	21§	·39†	·26§

Gold Coast.||

The name of the Colony points to its mineral resources. The principal gold mines are situated in Wassaw and Appolonia in the Western District. The rules relating to prospecting and obtaining concessions in the Colony are contained in a Blue Book¶ published in 1901.

- The ores of silver, mercury, lead, tin, copper, and iron have been found, and sandstone is abundant.

TABLE 345.

PERSONS EMPLOYED at GOLD MINES during the Year 1898.**

Under-ground.	Above-ground.			Total.
	Males.	Females.	Total.	
881	1,811	221	2,032	2,913

* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

† Not ascertainable.

‡ Excluding Perak.

§ Excluding Negri Sembilan and Perak.

|| Official Return furnished by the Colonial Secretary of Gold Coast Colony, *Blue Books for Gold Coast for 1898 and 1899*.—Arthur "Gold Coast Annual Report for 1901," *Colonial Reports*, Annual, No. 375 [Cd. 788-45], London, 1902, p. 21.

—Irvine, "The Gold Mines of West Africa," *Jour. Soc. Arts.*, Vol. XLVII., p. 305.

¶ *Gold Coast.—Laws and Regulations affecting Lands and Mines and the Labour of Natives, 1901*, London, 1901 [Cd. 575].

** No later statistics showing the total number of persons employed appear to exist.

GOLD COAST—*continued.*

The quantity and value of gold exported in 1900 and in 1901 were as follows :—

TABLE 346.

Metal.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Ozs.	Kilos.	£	Ozs.	Kilos.	£
Gold	10,557	328	38,007	6,162	192	22,187

The amount of gold obtained from the mines which furnished the returns of persons employed was 10,458 ozs.

TABLE 347.

DEATHS from ACCIDENTS at GOLD MINES during the Year 1898.*

Under-ground.	Above-ground.	Total.	Death-rate per 1,000 persons employed.		
			Under-ground.	Above-ground.	Total.
1	—	1	1·13	—	·34

India.†

The three most important minerals worked are :—coal, gold ore, and salt.

Coal.—The total output of coal in 1901 was 6,635,727 tons. Four-fifths of the coal produced in India comes from Bengal; the remainder is obtained from the Punjab, Central Provinces, Assam, Burma, Central India, the Nizám's Dominions, and Baluchistan.

The resources of India as a coal-producing country are immense, and very large areas, rich in mineral fuel, have not yet been touched. The principal coal mines are in the following coalfields and districts :—Raniganj, Girideh, and Jherria in Bengal, Singareni in the Nizám's Territory, Lakhimpur in Upper Assam, Mohpani and Warora in the Central Provinces, and at Umaria in the Central Indian Agency.

The output of coal in India has increased rapidly, and suffices to supply the wants of the country. During the year 1901–02 the imports of coal, coke, and patent fuel (mainly British) amounted to 285,786 tons, and the exports of coal (mainly from Bengal to Ceylon) to 524,087 tons.

Gems and Precious Stones.—Upper Burma has long been famous for its rubies, and the mining industry has entered the profitable stage. In addition, Upper Burma yields jade, a small amount of inferior amber, and some tourmaline. The output of diamonds from Bundelkhand, Central India, is insignificant.

Gold.—The most important mineral industry in India is gold mining; small quantities of the precious metal are washed from river sands in very many parts of the country, but the total amount so obtained is insignificant compared with the output of the quartz veins of Mysore. The value of the gold obtained is nearly 50 per cent. greater than that of the coal.

In Mysore the 14 gold mines at work in 1900 employed 24,587 persons, of whom 13,178 worked under-ground. The gold produced in 1900 was 509,553 ozs. (15,849 kilos.), of which more than one-third came from the Mysore Gold Mine, and more than one-third from the Champion Reef Gold Mine. In the year 1901 there were 25,060 persons employed at the Mysore Mines, and the output was 529,782 ozs. (16,478 kilos.) of gold.

Iron.—The various ores of iron, viz., magnetite, hematite, limonite, and clay ironstone, occur abundantly, and are smelted on a small scale by the aid of charcoal all over India.

* No later figures available.

† Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India, 1892 to 1901*; Calcutta, 1902; and information furnished by Mr. G. A. Stonier, Chief Inspector of Mines in India.

INDIA—continued.

Barakar, in Bengal, is the only place where iron-smelting is carried on by modern methods on a comparatively large scale. At Barakar the conditions are extremely favourable, for coal, iron ore, and limestone are found in fairly close proximity.

Manganese Ore.—The chief deposits of manganese ore are near Kamptee in the Central Provinces, and in the Vizagapatam district, Madras.

Mica.—Quarrying and a little mining for mica are confined to the provinces of Bengal and Madras.

Petroleum.—The oil wells in Upper Burma, where petroleum has been obtained for more than 2,000 years, furnish most of this mineral; the output of Assam is comparatively small.

Salt.—The sources of the salt supply are: (a) rock-salt mines and quarries of the Punjab, Kohat, and Mandi State; (b) lakes and wells of Rajputana, wells and springs of the Punjab, and Upper Burma; (c) evaporation of sea water in Bombay, Sind, Madras, and Lower Burma.

*Saltpetre.**—The nitre of India is obtained from a natural efflorescence from the soil, especially in the province of Bihar. The crude earth is purified by solution, filtration, evaporation, and crystallization.

The area over which saltpetre is manufactured is estimated at 232,314 square miles; and according to the census of 1891 there were 119,558 saltpetre workers and sellers in India.

According to the Official Statistical Department† the output given on page 331 is too low, for on an average 20,000 tons of saltpetre are exported annually from Calcutta.

Slate—This mineral is quarried at Monghyr, Bengal, and in the Kangra Valley, and Rewari, Punjab. It is used for roofing, paving, &c.

Soda Salts.—The carbonate and the sulphate of soda are manufactured in very many districts of India from the surface soil or from saline efflorescences, in like manner to saltpetre.

TABLE 348.

PERSONS EMPLOYED in and about MINES and QUARRIES in INDIA for the Years ending 31st December 1900 and 1901.‡

Kind of Mines,	Under-ground.			Above-ground.			Total Under and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1900.							
Coal	44,463	17,206	61,669	18,338	10,402	28,740	90,409
Corundum	100	100	200	—	—	—	200
Gems	—	—	—	1,177	—	1,177	1,177
Gold	13,413	—	13,413	9,906	1,707	11,613	25,026½
Iron ore	—	—	—	—	—	—	—
Magnesite	—	—	—	20	60	80	80
Manganese ore	—	—	—	2,538	1,704	4,242	4,242
Mica	2,494	2,100	4,594	3,553	1,370	4,923	9,517½
Plumbago	283	—	283	448	211	659	942
Salt	746	550	1,296	151	—	151	1,447**
Slate, &c.	—	—	—	88	—	88	88½
Total	61,499	19,956	81,455	36,219	15,454	51,673	133,128½
1901.							
Coal	46,028	19,640	65,668	19,314	10,327	29,641	95,309
Gems	1,209	35	1,244	648	5	653	1,897
Gold	14,392	—	14,392	9,261	1,853	11,114	25,506
Manganese ore	1,821	1,111	2,932	740	558	1,298	4,230
Mica	5,599	198	5,797	1,549	1,873	3,422	9,219
Plumbago	348	4	352	430	187	617	969
Salt	859	606	1,465	136	—	136	1,601**
Slate, &c.	1,219	162	1,381	1,400	979	2,379	3,760½
Total	71,475	21,756	93,231	33,478	15,782	49,260	142,491½

* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 54.

† *Ibid.*, p. i.

‡ Official Return furnished by Mr. G. A. Stonier, Chief Inspector of Mines in India.

§ Excluding persons employed at alluvial gold mining in Burma.

¶ No returns. About 63,000 tons mined.

** Returns incomplete.

*** Mines only.

INDIA—continued.

TABLE 349.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1900 and 1901.*

Mineral.	1900.			1901.†		
	Quantity.		Value.	Quantity.		Value
	Statute Tons. (Not stated)	Metric Tons. —	Rs. (Not stated)	Statute Tons.	Metric Tons.	Rs.
Alum	(Not stated)	—	(Not stated)			
Amber	cwt. 9	kilos. 457	1,540			
Asbestos	cwt. 1	kilos. 51	8			
Clay	3,093,988	3,143,639	4,126,660			
Do.	500	508	(Not stated)			
Do.	(Not stated)	—	28,208			
Coal	6,118,692	6,216,882	20,146,222	6,635,727	6,742,214	19,850,582
Copper ore	76	77	244			
Corundum	69	70	3,382			
Do.	—	—	—			
Do.	—	—	—			
Diamonds	carats 169	grams 34	11,372			
Garnets	cwts. 1,251	kilos. 63,554	50,000			
Gold	ozs. 513,266	kilos. 15,064	28,377,063	ozs. 531,766	kilos. 16,540	28,961,061
Granite	361,486	367,287	288,081			
Do.	1,449	1,472	(Not stated)			
Gravel and rubble	167,389	170,075	95,818			
Gypsum	4,345	4,415	1,698			
Iron ore	63,073	64,085	165,924			
Do.	(Not stated)	—	1,643			
Jade	89	90	163,396			
Laterite	556,304	565,231	589,035			
Limestone	1,182,892	1,201,875	760,408			
Magnesite	225§	—	(Not stated)			
Manganese ore	130,670†	132,767	1,700,139	133,170†	135,307	1,437,858
Mica	916§	931	885,669||	1,138	1,156	995,892
Petroleum	gals. 37,729,211	litres 171,421,086	2,231,325	gals. 50,075,117	litres 237,514,191	3,065,131
Plumbago	1,829§	1,858	(Not stated)	2,490	2,530	(Not stated)
Rubies	(Not stated)	—	1,459,898			
Salt	1,005,293	1,021,426	4,585,454	1,102,546	1,120,239	5,622,728
Saltpetre	11,524†	11,709	1,629,657	12,550	12,751	(Not stated)
Sandstone	389,180	395,425	430,649			
Do.	5,087	5,118	325†			
Slate	cubic ft. 5,191	cubic metres 147	27,674			
Do.	7,225	7,341	(Not stated)			
Do.	34	35	230			
Soapstone	111	113	30,029			
Do.	2,302	2,339	(Not stated)			
Do.	82	83	81			
Do.	(Not stated)	—	206,972			
Stone, miscellaneous	264,906	269,157	5,267			
Do. do.	(Not stated)	—	—			
Tin ore	104	106	128,009	70	71	116,595
Trap	744,346	756,201	143,951			
Tourmaline	lbs. 73	kilos. 33	18,600			

* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India 1891 to 190* Calcutta, 1901, and corresponding statistics for 1901, Calcutta, 1902.

† Exported.

‡ Incomplete.

§ This quantity has been taken from the Report of the Inspector of Mines for 1900.

|| Value estimated.

INDIA—continued.

TABLE 350.

OUTPUT and VALUE of MINERALS, classified according to the PROVINCES or STATES, for the Years 1900 and 1901.*

Mineral and Province or State where wrought.	1900.			1901.‡		
	Quantity.		Value.	Quantity.		Value.
INDIA.						
<i>Ajmere-Merwara.</i>	Statute Tons.	Metric Tons.	Rupees.†	Statute Tons.	Metric Tons.	Rupees.†
Clay	636	646	92			
Granite... ..	125,127	127,135	55,217			
Limestone	4,892	4,971	7,463			
Sandstone	10,691	10,863	7,235			
Stone, miscellaneous	86	87	1,080			
Total value in Rupees ...	—	—	71,087			
" " in £ sterling	—	—	£4,739			
<i>Assam.</i>						
Coal	216,736	220,214	1,025,819	254,100	258,178	1,206,975
Limestone	79,252	80,524	121,631			
Petroleum	gals. 753,049	litres 3,421,447	79,357	gals. 631,571	litres 2,869,516	33,252
Total value in Rupees ...	—	—				
" " in £ sterling	—	—				
<i>Bengal.</i>						
Clay	2,000,000	2,032,095	3,000,000			
Coal	4,978,492	5,058,385	14,401,348	5,487,585	5,575,048	14,496,413
Granite	100,000	101,605	100,000			
Gravel and rubble	144,000	146,311	80,000			
Iron ore	57,000	57,915	110,000			
Laterite	100,000	101,605	60,000			
Limestone	100,000	101,605	80,000			
Mica	429	436	417,000	914	929	457,715
Saltpetre	8,000	8,128	1,200,000			
Sandstone	40,000	40,642	25,000			
Slate	600	610	1,000			
Soapstone	46‡	47	1,148			
Trap	65,000	66,043	54,000			
Total value in Rupees ...	—	—	19,529,496			
" " in £ sterling	—	—	£1,301,966			
<i>Berar.</i>						
Clay	288	293	144			
Laterite	—	—	—			
Limestone	13,265	13,478	2,865			
Stone, miscellaneous	11,603	11,789	2,877			
Trap	679,346	690,248	89,951			
Total value in Rupees ...	—	—	95,837			
" " in £ sterling	—	—	£6,389			
<i>Coorg.</i>						
Clay	500	508	(Not stated)			
Granite	16,633	16,900	49,899			
Laterite	335	340	335			
	—	—	—			

* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India 1892 to 1900*, Calcutta, 1901, and corresponding statistics for 1901, Calcutta, 1902.

† The value of the rupee has been calculated at £1 = 15 rupees.

‡ Including production of North-West Provinces.

§ Incomplete.

INDIA—continued.

OUTPUT and VALUE of MINERALS, classified according to PROVINCES or STATES, for the Years 1900 and 1901—continued.

Mineral and Province or State where wrought.	1900.			1901.‡		
	Quantity.		Value.	Quantity.		Value.
INDIA—cont.						
Madras.	Statute Tons.	Metric Tons.	Rupees.	Statute Tons.	Metric Tons.	Rupees.
Clay	—	—	—			
Corundum	—	—	—			
Gold	ozs. 4	—	253			
Granite	—	—	—			
Iron ore	992	1,008	1,927			
Laterite	—	—	—			
Limestone	—	—	—			
Magnesite	225†	229	(Not stated)			
Manganese ore	100,770*	102,387	803,139	73,820*	80,085	622,560
Mica	487†	495	(Not stated)	224	228	558,177
Plumbago	400†	408	—			
Salt	322,210	327,381	1,702,830	339,544	344,903	1,747,271
Saltpetre	1,831	1,860	203,552			
Sandstone	—	—	—			
Slate	—	—	—			
Soapstone	—	—	—			
Stone, miscellaneous	—	—	—			
Trap	—	—	—			
Total value in Rupees ...	—	—	—			
" " in £ sterling	—	—	—			
N.W. Provinces and Oudh.						
Granite	1,449	1,472	(Not stated)			
Iron ore	10	10	63			
Limestone	798,151	810,959	297,600			
Sandstone	150,754	153,173	151,050			
Slate	34	35	(Not stated)			
Soapstone	†	—	†			
Bombay, including Sindh.						
Salt	471,048	478,607	1,486,577	335,324	340,705	981,072
Total value in £ sterling	—	—	£99,105	—	—	£65,405
Burma.						
Amber	cwt. 9	kilos. 457	1,540			
Clay	820,040	833,200	754,976			
Coal	10,228	10,390	76,710	12,466	12,666	93,495
Gold	ozs. 1,236	kilos. 38	49,905	ozs. 1,984	kilos. 62	114,100
Granite	24,798	25,196	29,609			
Gravel and rubble	23,389	23,764	15,818			
Iron ore	—	—	—			
Jade	89	90	163,396			
Laterite	201,127	204,355	374,808			
Limestone	18,432	18,728	55,741			
Petroleum	gals. 36,974,288	litres 167,991,125	2,151,663	gals. 49,441,734	litres 224,636,442	3,031,595
Plumbago	—	—	—			
Rubies	(Not stated)	—	1,459,898			
Salt	21,141	21,480	755,176	22,247	22,604	863,952
Sandstone	33,359	33,894	87,981			
Soapstone	51	52	10,131			
Soapsand	111	113	230			
Tin ore	104	106	128,009	70	71	116,595
Tourmaline	lbs. 73	kilos. 33	18,600			
Total value in Rupees ...	—	—	6,134,191			
" " in £ sterling	—	—	£408,946			

* Exported.

† This quantity has been taken from the Report of the Inspector of Mines for 1900.

‡ Included with Bengal.

§ Incomplete.

INDIA—continued.

QUANTITY and VALUE of MINERALS, classified according to PROVINCES or STATES, for the Years 1900 and 1901—continued.

Mineral and Province or State where wrought.	1900.			1901.‡		
	Quantity.		Value.	Quantity.		Value.
INDIA—cont.						
Central Provinces.	Statute Tons.	Metric Tons.	Rupees.	Statute Tons.	Metric Tons.	Rupees.
Clay ...	57	58	20			
Coal ...	172,842	175,616	779,056	191,516	194,589	875,151
Iron ...	2,377	2,415	5,890			
... ..	4,278	4,347	6,090			
... ..	—	—	(Not stated)			
... ..	82	83	9			
... ..	40	41	12			
... ..	67	68				
Punjab.						
... ..			714,417	67,730	68,817	553,604
... ..			56			
... ..			305	gals. 1,812	litres 8,233	284
... ..			639,259†	405,068	411,568	2,028,821
... ..			226,105			
... ..			1,580,142			
... ..			£105,343			
... ..						
... ..		kilos 51	8			
... ..		277,347	371,428			
... ..		677,004	3,148,872	622,330	632,317	2,624,944
Copper ore ...	76	77	244			
Corundum ...	69	70	3,382			
Do. ...	—	—	—			
Do. ...	—	—	—			
Diamonds ...	carats 169	grams. 34	11,372			
Garnet ...	cwt. 1,251	kilos. 63,554	50,000			
Gold ...	ozs. 512,026	kilos. 15,926	28,326,905	ozs. 529,782	kilos. 16,478	28,846,961
Granite ...	94,928	96,451	53,356			
Gypsum ...	4,345	4,415	1,698			
Iron ore ...	2,690	2,733	47,988			
Do. ...	(Not stated)	—	1,643			
Laterite ...	250,564	254,585	147,802			
Limestone ...	168,900	171,610	195,108			
Mica ...	2½	2½	212			
Plumbago ...	1,429	1,452	(Not stated)	2,490	2,530	(Not stated)
Salt ...	363†	368	1,612	363||	369	1,612
Sandstone ...	154,336	156,813	159,374			
Do. ...	5,037	5,118	325§			
Slate ...	cubic ft. 5,191	cubic metres 147	26,662			
Soapstone ...	6,558	6,663	18,750			
Do. ...	2,205	2,240	81			
Stone, miscellaneous...	(Not stated)	—	203,015			
Do. ...	253,217	257,281	5,267			
Do. ...	(Not stated)	—	—			
Do. ...	—	—	—			

* Including output of Rajputana.

† " value "

‡ Exclusive of a large quantity included under Punjab.

§ Incomplete.

|| These figures relate to the year 1900, those for 1901 not having been received.

INDIA—continued.

TABLE 351.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1900 and 1901.*

Class of Mines or Workings.	1900.			1901.		
	Number of Deaths.			Number of Deaths.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	61	3	64	66	4	70
Gems	—	—	—	6	1	7
Gold†	56	8	64	61	14	75
Manganese	—	—	—	—	1	1
Mica	8	—	8	18	—	18
Salt	1	—	1	3	—	3
Slate	—	—	—	3	—	3
Total	126	11	137	157	20	177

TABLE 352.

DEATH-RATE FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1900 and 1901.*

Class of Mines or Workings.	1900.			1901.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal	1·01	·12	·75	1·04	·14	·75
Gems	—	—	—	4·82	1·53	3·69
Gold	4·18	·69	2·56	4·24	1·34	2·90
Manganese	—	—	—	—	·77	·24
Mica	1·74	—	·84	3·10	—	1·95
Salt	·77	—	·69	2·05	—	1·87
Slate	—	—	—	8·13	—	3·86
Total	1·07	·10	·77	1·26	·16	·91

* Report of the Chief Inspector of Mines in India for the year ending 31st December, 1901, Calcutta, 1902. The death-rates in this Table 352 are those given in the Chief Inspector's report, but they do not appear to have been calculated in the manner customary in this country.

† Including Mysore Gold Mines.

INDIA—continued.

TABLE 353.

DEATHS FROM ACCIDENTS at the MYSORE GOLD MINES.*

Year.	Persons Employed.	Deaths.			Death-rate per 1,000 Persons Employed.		
		Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
1897	19,868	93	4	97	7.55	.53	4.88
1898	21,597	48	5	53	4.09	.51	2.45
1899	21,093	32	6	38	2.66	.66	1.80
1900	24,587	55	8	63	4.17	.70	2.56
1901	25,060	61	14	75	4.29	1.29	2.99
Average death-rate	—	—	—	—	—	—	2.90

Mining in India is governed by Act No. VIII. of 1901 ; “ An Act to provide for the Regulation and Inspection of Mines.”

Labuan. (See BRITISH BORNEO.)

Leeward Islands. (See REDONDA AND SOMBRERO.)

Malta.

A soft oolitic limestone is quarried for building purposes ; 51,953 slabs, and 800 tons in blocks of stone were exported in 1901.†

Natal (including ZULULAND).‡

The coal resources of Natal are stated to be large.

In addition to coal, the Colony is stated to possess deposits of asbestos, copper ore, gold ore, graphite, limestone, marble, mica, nickel ore, and slate.

TABLE 354.

PERSONS EMPLOYED at PRODUCING COLLIERIES during the Years 1900 and 1901.

Year.	Below-ground.	Above-ground.	Total.
1900	1,149	453	1,602
1901	2,321	1,076	3,397

Official Returns furnished by Mr. G. A. Stonier, Chief Inspector of Mines in India, and *Report of the Chief Inspector of Mines for Mysore for 1901.* Bangalore. 1902.

† Gov. Sir F. W. Grenfell, “Malta. Report for 1901,” *Colonial Reports—Annual*, No. 358 [Cd. 788-28].

‡ *Reports on the Mining Industry of Natal for 1900 and 1901.* Pietermaritzburg.

NATAL—continued.

TABLE 355.

QUANTITY and VALUE of COAL and GOLD produced during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
Coal	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
	241,330	245,203	241,330*	569,200	578,334	549,439
Gold	ozs. 13	gr. 404	50	ozs. 135	kilos. 4	531

TABLE 356.

DEATHS from ACCIDENTS at PRODUCING COLLIERIES during the Years 1900 and 1901.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1900	1	—	1	—	—	—	1	·62
1901	40	—	40	3	—	3	43	12·66

In addition to the 43 deaths recorded in the table, there was 1 person killed at a colliery which had not reached the production stage. The high death-rate is mainly due to an explosion of fire-damp at the New Campbell colliery, which caused the loss of 31 lives. The ignition of the gas was due to a defective safety lamp. Coal dust did not play an important part in the explosion.

Newfoundland.†

At the present time the important mineral exports from Newfoundland are copper ore, copper regulus, and iron ore.

Copper Ore.—The mines at Tilt Cove are by far the largest producers.

Iron Ore.—The whole of the ore comes from Bell Island, Conception Bay, whose valuable deposits of red hæmatite are being mined on a large scale; the ore is shipped to Nova Scotia and to the United States. The table shows that the output is increasing rapidly, and it is expected that it will reach a million tons in 1902.

Slate.—The Wilton Grove Slate quarry in Smith's Sound is worked actively; and the slate is imported into England with profit.

TABLE 357.

PERSONS EMPLOYED at MINES and QUARRIES during the Years 1900 and 1901.

Kind of Workings.	1900.			1901.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Copper mines ...	173	229	402	201	167	368
Iron ore workings	—	865	865	909	44	953
Stone quarries ...	—	85	85†	100	—	100†
Total ...	173	1,179	1,352	1,210	211	1,421

* Value estimated by the Commissioner of Mines, see Report on the Mining Industry of Natal for 1900, Pietermaritzburg, 1901, p. 2.

† Report on the Mineral Resources for 1901, by J. P. Howley, Director of Geological Survey of Newfoundland, 1902.

‡ Incomplete.

NEWFOUNDLAND—continued.

TABLE 358.

QUANTITY and VALUE of the MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.			1901.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	\$	Statute Tons.	Metric Tons.	\$
Copper ore and regulus* ...	70,614	71,767	82,146	75,348	76,557	78,992
Granite... ..	—	—	514	3,240	3,292	4,050
Iron ore	817,216	322,307	65,181	788,906	750,062	151,696
Iron pyrites	—	—	—	7,532	7,653	7,620
Limestone	—	—	—	1,300	1,321	300
Slate	600	610	2,219	2,000	2,022	4,628
Stone	—	—	—	—	—	—
Cobble	—	—	—	500	508	108
Building	500	508	108	5,000	5,080	1,027
Paving	—	—	—	—	—	2,908
Total Value			150,168			246,213

TABLE 359.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1900 and 1901.

Kind of Workings.	1900.		1901.	
	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.
Copper Mines	3	7.46	—	—
Iron Ore Workings	—	—	1	1.05
Stone Quarries	—	—	—	—
Total	3	2.22	1	.70

New Guinea (see BRITISH NEW GUINEA).

* The copper ore contains a little gold, and it is reckoned that 2,000 to 3,000 ounces are extracted annually from Newfoundland ores. It is estimated that 2,755 tons of metallic copper, and 2,180 oza. of gold were obtainable from the ore in 1901.

New Zealand.*

The three important minerals worked in New Zealand are coal, gold, and kauri gum.

Coal.—149 collieries were at work in 1901. The largest are near Westport, on the west coast of the Middle Island. More than one-third of the total output of New Zealand is brown coal or lignite, obtained in the Southern district of Middle Island; many of the workings are open-cast.

Gold.—Gold is obtained in various parts of the Islands; the precious metal is extracted by ordinary alluvial diggings, by hydraulic mining, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this branch of mining finds employment for more than 2,000 persons in the Colony. During the year 1901 183 dredges were at work and 59 under construction, in addition to 33 standing and 19 under removal. One-seventh of the total output of gold in 1901 was obtained by dredging.

Kauri Gum.—Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives.

TABLE 360.

PERSONS EMPLOYED at COAL MINES during the years 1900 and 1901.†

Year.	Under-ground.	Above-ground.	Total.
1900	1,843	617	2,460
1901	2,066	688	2,754

TABLE 361.

PERSONS EMPLOYED at GOLD MINES during the Years 1900 and 1901.‡

Mining District.	Alluvial Miners.		Quartz Miners.		Total.		Grand Total.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1901.	1900.
Auckland	—	—	3,508	—	3,508	—	3,508	3,233
Marlborough	152	—	37	—	189	—	189	155
Nelson	1,857	301	747	—	2,604	301	2,905	2,913
Westland	1,346	335	—	—	1,346	335	1,681	2,184
Otago	3,414	732	303	—	3,717	732	4,449	5,017
Total	6,769	1,368	4,595	—	11,364	1,368	12,732	13,502

* Hon. James McGowan, *New Zealand, Mines Statement*, Wellington, 1902.† *New Zealand Inspection of Coal Mines Reports*. C.—3a, Wellington, 1901 and 1902.‡ Hon. James McGowan, *New Zealand, Mines Statement*, Wellington, 1902. C.—2, p. 15.

NEW ZEALAND—continued.

TABLE 362.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.*

Mineral.	1900.			1901.		
	Quantity		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony	8	3	101	30	30	136
Chrome ore	28	28	110	—	—	—
Coal (including Brown Coal and Lignite).	1,093,990	1,111,546	583,778	1,227,628	1,247,239	676,174
Copper ore	12	12	45	3	3	105
Gold	om. 373,618	kilos. 11,621	1,499,902	om. 455,561	kilos. 14,169	1,753,733
Kauri gum	10,159	10,328	622,298	7,541	7,662	446,114
Manganese ore	166	169	533	208	211	614
Oil Shale	—	—	—	12,048	12,241	6,024
Silver	om. 326,457	kilos. 10,154	33,879	om. 571,134	kilos. 17,764	65,253
Sundry mixed minerals	2,126	2,160	12,751	696	707	7,775
Total value	—	—	2,703,147	—	—	2,955,963

TABLE 363.

DEATHS from ACCIDENTS at MINES and DREDGING WORKS during the Years 1900† and 1901.*

Kind of Workings.	1900.		1901.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Coal mines	4	1.63	3	1.09
Gold mines	4	.94	6	1.31
„ alluvial, hydraulic, sluicing and dredging.	9	.98	8	.98
Total	17	1.07	17	1.10

* Hon. James McGowan, *New Zealand, Mines Statement*, Wellington, 1902. C.—2, pp. 1 and 6.

† Hon. A. J. Cadman, " " " 1901. C.—2, pp. 1 and 6.

Nigeria.

About the mineral wealth of Nigeria little can be said definitely at the present time. The region is known to contain deposits of antimony, silver, and tin.

North Borneo. (*See BRITISH BORNEO.*)

Nova Scotia. (*See CANADA.*)

Ontario. (*See CANADA.*)

Orange River Colony.

Coal.—The Colony possesses valuable coal resources. No particulars of output have yet been received.

*Diamonds.**—No work was done at the Jagersfontein mine during the financial year ended 31st March, 1902.

Quebec. (*See CANADA.*)

Redonda† (Leeward Islands).

Owing to the state of the phosphate trade, the Redonda deposit was not worked in 1901.

TABLE 364.

QUANTITY and VALUE of MINERAL produced during the Years 1900 and 1901.

Mineral.	1900.		1901.		
	Quantity.		Quantity.		Value.
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.	£
Phosphate of alumina ...	2,195	2,230	Nil.	—	—

* *The New Jagersfontein Mining and Exploration Co., Ltd. Fourteenth Annual Report and Accounts for the year ended 31st March, 1902.* Kimberley, 1902. Page 1.

† Information furnished by the London Phosphate Syndicate, Ltd.

Rhodesia.

Rhodesia is rich in coal and gold.*

Coal.—In the Wankie coalfield alone, which lies 140 miles north-west of Bulawayo, the workable seams are considered capable of yielding 1,500 million tons of coal.

Gold.—The auriferous deposits are very extensive, and the output of gold is increasing very rapidly.

TABLE 365.
OUTPUT of GOLD.*

1900.		1901.	
Ozs.	Kilos.	Ozs.	Kilos.
91,940	2,860	172,061	5,352

The number of natives† employed at the mines in February 1902, was 6,555, of whom at least 2,530 were Shangaans from Portuguese East Africa.

Sarawak. (See BRITISH BORNEO.)

Somali Coast Protectorate.‡

Mica is found and there are indications of iron ore.

Straits Settlements.§

There are no mines of importance in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore; the value of the alluvial tin from Malacca in 1901 was only £136.

Laterite is quarried for road metalling in Singapore and Malacca, and granite in the islands to the East of Singapore.

Transvaal.||

The resumption of work at the Transvaal mines proceeds slowly; there were 15 gold and 12 coal mining companies at work and producing in December, 1901, as compared with 77 and 17 respectively in the month of August previous to the outbreak of the war. During this latter month about 96,000 natives were employed on the Witwatersrand.

* *The British South Africa Company, Mining in Rhodesia 1902.*

† *Report of Executive Committee of the Rhodesia Chamber of Mines, 27th March 1902, p. 3.*

‡ Consul-General Hayes Sadler, "Trade of the Somali Coast for the year 1898-99." *Dipl. and Cons. Reports*, No. 2,384, Ann. Ser., 1900 [Cd. 1-21].

§ Colonial Reports, Annual. No. 360. Straits Settlements. Report for 1901. [Cd. 788-30.] London, 1902. p. 19

|| Weldon.—*Transvaal Mines Department. Half-yearly Report of the Government Mining Engineer for the six months ending 31st December, 1901.* Pretoria, 1902.

TRANSVAAL—*continued.*

TABLE 366.

AVERAGE NUMBER of PERSONS EMPLOYED at MINES during the six months ended 31st December, 1901.

Kind of Mines.	Underground.		Aboveground.		Total.	
	Whites.	Coloured	Whites.	Coloured.	Whites.	Coloured.
Coal	43	2,324	124	1,412	167	3,736
Gold	661	6,068	1,873	7,033	2,534	13,101
Total	704	8,392	1,997	8,445	2,701	16,837

TABLE 367.

OUTPUT and VALUE of MINERALS during the six months ended 31st December, 1901.

Mineral.	Quantity.		Value.
	Tons.	Metric Tons.	£
Coal	468,169	475,682	201,634
Gold (Fine)	ozs. 230,801	kilos. 7,179	980,381
Total	—	—	1,182,015

The table of exports below affords further information concerning the output of gold.

TABLE 368.

GOLD EXPORTED to LONDON during the six months ending 31st December, 1901.

Classification.	Quantity.	Value.
1. Gold won prior to the British occupation, including gold lodged with various banks under the Proclamation of the Military Governors of Johannesburg and Pretoria of June, 1900.	Ozs. 155,985	£ 547,945
2. Gold declared by gold mines as having been won during May and June, 1901.	30,359	106,428
3. Gold won during the six months ended 31st December, 1901	225,745	821,285
Total	412,089	1,475,658

Very accurate statistics are given concerning the manner in which the gold was actually obtained during the six months in question.

TRANSVAAL—continued.

TABLE 369.

Source of the gold.	Quantity of fine gold.	Value at 24-24778 per oz.
Stamp mills at the mines	Ozs. 137,794	£ 585,312
Chemical processes at the mines	66,358	281,870
Metallurgical and chemical works	26,649	112,199
Total	230,801	980,381

TABLE 370.

FATAL ACCIDENTS at COAL and GOLD MINES during the six months ended 31st December, 1901.

Mines.	Number of persons killed.			Death-rate per 1000 persons employed.
	White.	Coloured.	Total.	
Coal	—	7	7	1.79
Gold	1	18	19	1.22
Total	1	25	26	1.33

TABLE 371.

FATAL ACCIDENTS at COAL and GOLD MINES, CLASSIFIED according to cause, during the six months ended 31st December, 1901.

Cause of Accident.	Persons Killed.			
	Coal Mines.		Gold Mines.	
	Whites.	Coloured.	Whites.	Coloured.
Explosives	—	—	—	2
Travelling in cage or skip	—	—	—	1
Travelling by ladders	—	1	—	—
Falling in shafts, excavations, &c....	—	—	—	2
Fall of rock	—	4	—	3
Trucks and tramways	—	1	1	2
Boilers and steam pipes	—	—	—	1
Machinery	—	1	—	2
Directly caused by electricity	—	—	—	1
Miscellaneous... ..	—	—	—	4
Total	—	7	1	18

Trinidad.*

Asphalt.—The pitch or asphalt deposit at La Brea continues to be a fruitful source of revenue. The so-called "Pitch Lake," covering an area of 104 acres, has been leased to the Trinidad Asphalt Company since 1st January, 1888.

In 1887 the revenue from Asphalt was £5,113, in 1888—the first year of the concession—it bounded up to £17,188, and during the season now under review it amounted to something like £47,912.

Coal.—An extensive coal deposit is being explored in the Guanapo District by the Government. Seams of coal of a fairly good quality have been found at three different depths, and the yield promises to be good. Several private companies are making explorations for coal in different parts in the island.

Glance Pitch.—Large quantities of this mineral, also known as manjak have been found at Vista Bella.

Petroleum.—Borings for mineral oil have been made in various places with more or less success.

Stone.—There are several limestone quarries; the most important are situated to the East of Port-of-Spain, Pointe Gourde, Carrera and Gasparillo Islands.

TABLE 372.

QUANTITY and VALUE of ASPHALT exported in the Years 1900 and 1901-2.

	1900.			1901-1902.†		
	Quantity.		Value.	Quantity.		Value.
	Galls.	Litres.	£	Galls.	Litres	£
Asphalt, liquid	2,052	9,323	1,381	20,492	93,105	169
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
„ purified	16,847	17,117	33,695	15,648	15,899	31,296
„ raw	141,905	144,182	142,384	127,747	129,797	127,748
„ dried	—	—	—	589	598	589
Total value	—	—	177,460	—	—	159,802

Turks and Caicos Islands.‡

The production of salt is the most important industry in these islands. It is obtained by the solar evaporation of sea water in shallow ponds on the coast. Most of it is exported to the United States and Canada.

* *Blue Book for Trinidad*, 1901-2, AA 2

† Year ended 31st March, 1902.

‡ Governor Sir A. W. L. Hemming, "Turks and Caicos Islands Annual Report for 1901.—*Colonial Reports—Annual*, No. 363, London, 1902 [Cd. 788-33].

TURKS AND CAICOS ISLANDS—*continued.*

TABLE 373.

Mineral.	1900.			1901.		
	Quantity Exported.		Value.	Quantity Exported.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Salt	54,737	55,615	23,492	52,312	53,151	22,782

Uganda Protectorate.*

What little is known about the mineral resources of Uganda may be summed up as follows :—Fragments of coal are found in the bed of the streams all round Mount Elgon ; there are traces of copper in Busoga ; iron ore is abundant in the Protectorate and alluvial gold is known to exist in parts lying far from the railway.

West Indies. (See BARBADOS, DOMINICA, REDONDA, and TRINIDAD.)

* Sir H. H. Johnston, *Report on the Uganda Protectorate, Africa*, No. 7, (1901). [Cd. 671], London, 1901, p. 12.

FOREIGN COUNTRIES.

Abyssinia.*

Coal.—Workable lignite is said to occur at Debra, Libanos, and Ankober.

Gold.—This metal is obtained from the Wallega, Shankalla and Benischongul districts. The gold exported from Addis Abbaba and Harrar was estimated to be worth £159,600, the amount of fine gold may be reckoned to have been 31,161 ozs., and of fine silver contained in the gold about 2,710 ozs.

Salt.—Mines at Arho in the Tittal country between Makallé and the Red Sea produce a large quantity of salt; the mineral is likewise obtained from Gojam. The estimated value of the salt produced in the whole of the Addis Abbaba district amounted to £18,700.

Algeria.†

The two principal minerals raised in Algeria are iron ore and phosphate of lime. A considerable quantity of limestone is quarried, and the workings for salt and zinc ore are of some importance.

Iron Ore.—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by the Mokta-el-Hadid Mines near Bona and the Benisaf Mines near Tlemsen. The former produced 84,000 tons in 1901 and the latter 353,000 tons.

Marble.—Numidian marble had won renown in the time of the Romans. The onyx marble produced by the Colony is of great beauty. One of the localities where it is found is Sidi-Hamza. Quarries at Filfila near Philippeville produce statuary marble as well as many coloured varieties.

Petroleum.—Great hopes are based upon the occurrence of mineral oil in the Department of Oran; of the existence of wide petroliferous zones there is no question. It remains to be seen how far the oil can be extracted with profit.

Phosphate of Lime.—The growth of the phosphate industry has been very rapid. The annual output, which was only about 5,000 tons in 1893, rose to more than 300,000 tons in 1900. The phosphate is quarried in the vicinity of Tébessa and at Tocqueville in the Province of Constantine, and it is now the most important mineral product of Algeria. The production was 265,000 tons in 1901.

Salt.—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

Zinc Ore.—Calamine and blende are both worked and especially in the Department of Constantine.

TABLE 374.

PERSONS EMPLOYED during the Years 1900 and 1901.

Year.	At Mines.	At Underground Quarries.	At Open Quarries.
1900	2,201	1,000	2,718
1901	2,735	1,000	3,033

* Baird, "Report on the Trade of Addis Abbaba, and Harrar Abyssinia." *Dipl. and Cons. Reports*, No. 2531, Ann. Ser., 1899-1900 [Cd. 352-27] 1900, with map.

† *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1900, and pour l'année 1901.*

ALGERIA—continued.

TABLE 375.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore ...	93	15,874	—	—
Brown coal ...	400	4,800	213	2,556
Copper Ore ...	—	—	7,267	125,866
Iron ore ...	601,788	5,584,486	514,473	4,966,983
Lead ore, argentiferous ...	222	31,910	1,614	109,581
Rock salt and salt from brine ...	18,325	381,440	18,518	399,879
Zinc ore ...	30,281	1,587,970	26,913	1,317,608
Total Value in Francs ...	—	7,556,480	—	6,922,473
„ „ £ sterling ...	—	302,259	—	276,899

TABLE 376.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Clay ...	94,000	380,700	119,195	425,990
Flags ...	8,800	94,050	8,350	85,600
Gypsum ...	500	1,250	600	1,500
Limestone ...	25,700	605,250	27,000	637,500
Marble ...	—	—	—	—
Onyx... ..	228	64,980	294	83,790
Plaster ...	37,100	694,700	34,740	659,930
Phosphate of lime ...	319,422	6,388,440	265,000	5,300,000
Sand and gravel ...	71,860	72,846	86,727	94,352
Stone for building ...	712,330	1,843,265	798,560	1,843,606
„ (rough and broken) ...	750,500	1,117,500	1,436,250	1,413,750
Total Value in Francs ...	—	11,262,981	—	10,546,018
„ „ £ sterling ...	—	450,519	—	421,841

* Statistique de l'Industrie Minière en France et en Algérie pour l'année 1900, and pour l'année 1901.

TABLE 377.

DEATHS from ACCIDENTS during the Years 1900 and 1901.*

Kind of Working.	1900.		1901.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines... ..	6	2·72	3	1·10
Underground Quarries	12	12·00	2	2·00
Open Quarries	7	2·57	3	0·99
Total	25	4·22	8	1·18

Annam. (See INDO-CHINA.)**Arabia.**

The Arab is not a miner by nature, and there is little or no working for minerals on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

Argentine Republic.

All writers seem to agree that the mineral resources of the Argentine Republic are great†; little, however, has been done to develop them. In addition to the ores of copper, gold, iron, lead, mercury, nickel, and silver, the Republic can produce asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur. As railways are extended to the Andes, bringing facilities for working, the mining industry is sure to progress rapidly.

Unfortunately the National Department of Mines and Geology at Buenos Aires is unable to supply any statistics. The figures in the table below have, therefore, no official sanction.

Large quantities of salt are obtained from the brine of a huge salt lake near San Blas, some 800 miles south of Buenos Ayres. The output at the present time is 25,000 tons a year.‡

TABLE 378.

QUANTITY and VALUE of COPPER, GOLD, and SILVER produced during the Years 1900 and 1901.

Metal.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
Copper (fine) ...	Metric Tons. 76§	£ 5,510¶	Metric Tons. 793§	£ 52,013¶
Gold	Kilos. 66||	8,968	††	—
Silver	Kilos. 1,144||	4,679**	††	—

* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1900, and pour l'année 1901.*† "Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Proc., Inst. C. E.*, Vol. CXXVIII., 1896-7, Part II.‡ Consul Ross "Trade of Consular District of Buenos Ayres for the year 1901" *Dipl. and Cons. Reports*, No. 2767, Ann. Series [Cd. 786-71], p. 8.

§ Return compiled by Henry R. Merton & Co., Ltd., London.

|| *Report of the Director of the United States Mint for 1901.*

¶ Value of foreign copper in London market.

** Commercial value of fine silver.

†† Figures not available.

Aruba. (*See DUTCH WEST INDIES.*)

Austria-Hungary.*

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by the common Ministry of Finance of Austria-Hungary, though not incorporated with the Empire.

Coal.—Brown coal is worked on a large scale in Bohemia and in Hungary;† the principal brown coal mines in Hungary are situated in the counties of Nógrád, Borsod and Hunyad. Silesia is the province of Austria producing the largest amount of ordinary coal; next comes Bohemia, and then Moravia. The principal coal regions of Hungary are in the counties Krassó-Szöreny and Baranya.

Gold.—The bulk of the gold comes from mines in Hungary, and especially from the mineral region of Zalatna and from the neighbourhood of Nagybánya in the county of Szatmár.

Iron Ore.—Austria on the contrary is the chief producer of iron. Among the Austrian provinces, Styria takes the first place with about 60 per cent. of the output, next comes Bohemia with 35 per cent. The production of iron in Hungary is increasing, and the ores of this metal are worked in very many parts of the Kingdom, especially in the northern counties of Gömör and Szepes, and in the north-eastern counties of Krassó-Szöreny and Hunyad.

Lead Ore.—A large proportion of the Austrian lead ore comes from Carinthia.

Mercury.—The famous quicksilver mine at Idria in Carniola has now been worked for upwards of five centuries; since 1580 it has belonged to the State. A little mercury is obtained from Hungary, and the metal has recently been discovered in Dalmatia.‡

Opal.—The celebrated opal mines of Hungary are situated at Dubnik in the county of Sáros; they are worked by the State. The annual output is 10 to 12,000 carats.

Ozokerite and Petroleum.—Galicia is remarkable for two important products, mineral wax and mineral oil. The principal workings for the former are at Boryslaw in the Drohobycz district, which likewise has the most productive oil-wells.

* *Exposition Universelle de 1900, Paris: Catalogue Spécial de la Hongrie*, Budapest, 1900, p. 203; *Weltausstellung, Paris, 1900*; *Katalog der oesterreichischen Abtheilung*, Heft 7, Gruppe xi., Bergwesen, Vienna, 1900. Remenyik, *Les Mines de Métaux de Hongrie*, Budapest, 1900. Edvi-Illés, *L'Industrie des Mines de Fer et Hauts-fourneaux de Hongrie*, Budapest, 1900. Déry, *Les Charbonnages Hongrois*, Budapest, 1900.

† *L'exploitation des Charbonnages Hongrois*, Budapest, 1900.

‡ Churchill "Report on the Trade and Commerce of Trieste for the year 1901." *Dipl. and Cons. Reports*, No. 2762. Annual Series, London, 1902, p. 12.

AUSTRIA-HUNGARY—continued.

Salt.—Both in Austria and in Hungary the salt trade is a Government monopoly. Rock salt is obtained at Wieliczka in Galicia and in the county of Máramaros in Hungary, and in Transylvania; saliferous marl is treated by the lixiviation process in the Austrian Alps. On the shores of the Adriatic salt is extracted by solar evaporation from sea water.

Silver.—Bohemia and Hungary both produce silver. The Przibram mines in the former country have long been celebrated, not only as large producers of silver and lead, but also on account of their great depth.

AUSTRIA.

TABLE 379.

PERSONS EMPLOYED at MINES, arranged according to PROVINCE in which Employed, during the Years 1900* and 1901.†

Province.	Persons Employed.			
	1900.		1901.	
	Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower	1,078	0·77	1,025	0·69
„ Upper	1,693	1·20	1,691	1·14
Bohemia	63,522	45·12	68,314	45·99
Bukowina	223	0·16	103	0·07
Carinthia	4,190	2·98	4,132	2·78
Carniola	2,704	1·92	2,857	1·92
Dalmatia	644	0·46	763	0·51
Galicia	5,425	3·85	5,262	3·54
Görz and Gradisca	1	0·00	—	—
Istria	1,100	0·78	1,171	0·79
Moravia	12,479	8·87	12,886	8·68
Salzburg	496	0·35	552	·37
Silesia... ..	29,059	20·64	31,114	20·95
Styria	17,015	12·09	17,580	11·83
Tirol	1,144	0·81	1,102	·74
Vorarlberg	1	0·00	1	0·00
Total	140,774	100·00	148,553	100·00

* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1900*, Vienna, Part II., No. 2, p. 132.

† *Do. do. do. 1901*, Vienna, Part II., No. 2, p. 146.

AUSTRIA—continued.

TABLE 380.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1900 and 1901.*

Year	Coal.						Brown Coal.						Iron Ore.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.
1900 ..	148	59,190	8,945	4,926	—	67,461	264	50,638	2,409	1,234	2	54,473	36	5,412	87	161	—	5,660
1901 ..	148	61,786	8,412	5,146	—	70,344	264	55,841	2,571	1,178	1	59,591	37	5,606	91	174	—	5,871

TABLE 380—continued.

Year.	Other Mines.						All the Mines.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	General Total.
1900	119	11,769	961	587	20	13,310	560	127,169	6,782	6,866	22	140,774
1901	108	11,814	961	587	15	12,747	542	134,547	6,905	7,065	16	148,533

TABLE 381.

PERSONS EMPLOYED at SALT MINES and WORKS during the Years 1900 and 1901.†

Country or Province.	Salt Mines.			Brine Evaporating Works and Sea Salt Works.					Total at Salt Mines and Works.				
	Men.	Young Persons.	Total.	Men.	Women.	Young Persons.	Children.	Total.	Men.	Women.	Young Persons.	Children.	Total.
Upper Austria ..	403	2	405	931	16	1	—	948	1,334	16	3	—	1,353
Salzburg	196	—	196	186	3	—	—	189	382	3	—	—	385
Bukowina	43	—	43	37	—	—	—	37	80	—	—	—	80
Styria	107	—	107	331	6	—	—	337	438	6	—	—	444
Tyrol	131	—	131	119	—	—	—	119	250	—	—	—	250
Dalmatia	—	—	—	1,360	390	—	106	1,856	1,360	390	—	106	1,856
Istria	—	—	—	640	445	290	81	1,456	640	445	290	81	1,456
Galicia	1,546	—	1,546	632	—	—	—	632	2,178	—	—	—	2,178
Totals for 1901 ..	2,426	2	2,428	4,236	860	291	187	5,574	6,662	860	293	187	8,002
Totals for 1900 ..	2,414	3	2,417	4,280	888	273	174	5,615	6,694	888	276	174	8,032

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1901, Vienna, Part II, No. 2, pp. 134-137.

† Do. do. do. do. do. Part II, No. 2, p. 161.

AUSTRIA—continued.

TABLE 382.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1900 and 1901.*

Province.	Kind of Workings.	1900.				1901.			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
Galicia...	Ozokerite ...	2,163	55	11	2,229	2,569	74	17	2,660
.. ..	Petroleum ...	5,890	4	12	5,906	5,776	4	7	5,787

TABLE 383.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1900 and 1901.†

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum shale and vitriol ore ...	3,003	35,324	2,551	19,580
Antimony ore	201	18,042	126	22,785
Asphalt	887	48,015	541	38,710
Bismuth ore	4	12,789	16	20,000
Brown coal	21,539,917	112,633,577	22,473,509	125,187,561
Coal	10,992,545	95,590,921	11,738,840	109,656,605
Copper ore... ..	5,825	478,496	7,406	596,207
Gold ore†	227	42,831	143	31,814
Graphite	33,663	2,090,631	29,991	1,818,509
Iron ore	1,894,458	11,092,997	1,963,246	11,552,141
Lead ore	14,314	3,089,434	16,688	2,744,049
Manganese ore	8,804	136,948	7,796	127,331
Quicksilver ore	94,727	1,858,614	97,360	1,963,524
Silver ore‡	21,640	3,796,493	21,363	3,657,436
Sulphur ore	862	11,282	4,911	60,535
Tin ore	51	6,420	42	7,527
Tungsten ore	46	70,050	45	53,745
Uranium ore	52	161,346	48	188,270
Zinc ore	38,242	2,280,259	36,072	1,735,753
Total value in crowns ...	—	233,454,469	—	259,482,082
„ „ £ sterling ...	—	£9,719,170	—	£10,802,751

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1901, Vienna, Part II., No. 2, pp. 269 and 270.

† Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1901, Vienna, Part II., No. 1.

‡ 71 kilos. of fine gold were obtained at the Metallurgical Works in 1900, and 47 kilos. in 1901.

§ 39,572 kilos. of fine silver were obtained at the Metallurgical Works in 1900, and 40,203 kilos. in 1901.

AUSTRIA—continued

TABLE 384.

QUANTITY and VALUE of SALT produced during the Years 1900 and 1901.*

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Crowns.
Upper Austria	276	61,403	—	17,608	13,684,572
Salzburg	7	26,322	—	3,811	5,086,900
Bukowina	1,143	3,540	—	167	846,444
Styria... ..	2,059	18,690	—	2,116	4,058,278
Tyrol	19	13,229	—	1,228	2,210,590
Dalmatia	—	—	6,965	—	691,619
Istria	—	—	33,758	—	5,443,053
Galicia	36,695	52,418	—	51,683	17,419,697
Total for 1901 ...	40,199	175,602	40,723	76,613	49,441,153 £2,058,333
„ 1900 ...	43,563	175,660	32,064	78,989	49,785,864 £2,072,684

TABLE 385.

QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1900 and 1901.†

Province.	Mineral.	1900.		1901.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Crowns.	Metric Tons.	Crowns.
Galicia ...	Ozokerite	2,003	1,585,777	2,707	2,572,448
„ ...	Petroleum	347,213	21,113,577	404,662	23,010,589
	Total value in florins	—	22,699,354	—	25,583,037
	„ £ sterling	—	£945,019	—	£1,065,072

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1901, Vienna, Part II., No. 1, pp. 202 and 203.
† Do. do. do. 1901, do. No. 2, pp. 269 and 270.

AUSTRIA—continued.

TABLE 386.

ACCIDENTS at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1900 and 1901.*

Kind of Mines.	1901.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
Coal (bituminous)	84	440	1.25	139,748
Brown coal	97	466	1.70	231,686
Iron ore	8	47	1.38	245,405
Other mines (excluding salt and ozokerite mines, and petroleum wells).	10	67	0.84	22,529
Total for 1901	199	1,020	1.38	183,121
„ preceding year	246	1,010	1.75	140,851

TABLE 387.

ACCIDENTS at SALT MINES during the Years 1900 and 1901.*

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
1900	2	11	1.37	21,781
1901	—	8	—	—

TABLE 388.

ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS during the Years 1900 and 1901.†

Kind of Workings.	1900.			1901.		
	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.
Ozokerite	3	15	1.35	5	14	1.93
Petroleum	3	56	0.51	4	62	0.69

The accidents have been classified according to mineral worked, place, and cause.

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1901, Vienna, Part II., No. 2, pp. 178, 187 and 195.
† Do. do. do. do. pp. 283-286.

AUSTRIA—continued.

TABLE 389.

DEATHS classified according to the MINERAL worked, and the PLACE of the ACCIDENT, during the Years 1900 and 1901.*

Place of Accident.	Coal.	Brown Coal.	Iron Ore.	Rock Salt.	Other Minerals.	Total.
In perpendicular shafts ...	17	20	—	—	2	39
On inclined planes	4	4	1	—	1	10
In levels	17	14	—	—	1	32
At the working face	30	37	2	—	6	75
Above ground	16	22	5	—	—	43
Total for 1901	84	97	8	—	10	199
„ preceding year ...	61	163	9	2	13	248

TABLE 390.

DEATHS from ACCIDENTS, arranged according to MINERAL worked and PLACE where they happened, during the Years 1900 and 1901.†

Kind of Mines.	Percentage of Deaths.					
	Perpendicular Shafts.	Inclined Planes.	Underground Roadways.	At the Working Face.	Above-ground.	Total.
Coal	8.54	2.01	8.54	15.08	8.04	42.21
Brown coal	10.05	2.01	7.04	18.58	11.06	48.74
Iron	—	0.50	—	1.01	2.51	4.02
Rock salt	—	—	—	—	—	—
Other mines	1.01	0.50	0.50	3.02	—	5.03
Total for 1901	19.60	5.02	16.08	37.69	21.61	100.00
„ preceding year	13.71	3.63	35.88	34.28	12.50	100.00

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1901, Vienna, Part II., No. 2, pp. 183-187.

† Do. do. do. do. p. 178.

AUSTRIA—continued.

TABLE 391.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORKINGS for OZOKERITE and PETROLEUM) during the Years 1900 and 1901.*

Cause of Accident.	Number of Persons killed.		Increase or Decrease.
	1900.	1901.	
By falls of roof	45	38	— 7
„ haulage or winding appliances ...	20	43	+ 23
„ stones or things falling down ...	33	39	+ 6
„ machines or tools	7	7	—
„ falling down	15	32	+ 17
„ firedamp explosions	21	2	— 19
„ ignitions of inflammable gas ...	—	—	—
„ suffocation	58	10	— 48
„ coal, stone, &c., falling or sliding down above ground.	11	5	— 6
„ travelling in cage or climbing ladders	4	2	— 2
„ blasting	9	4	— 5
While undercutting (holing)	3	4	+ 1
„ timbering or walling	1	4	+ 3
By irruption of water	2	—	— 2
„ other causes	19	9	— 10
Total	248	199	— 49

The preceding tables show that in the mines of Austria proper (exclusive of workings for ozokerite and petroleum) there were 199 deaths from accidents, or 49 less than in 1900.

The accidents at the ozokerite and petroleum workings separately were as follows :—

TABLE 392.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS, classified according to the PLACE where the ACCIDENT happened, during the Year 1901, and total for the preceding year.†

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts	3	3
In sinks and rises	—	—
In levels	2	7
At the working face	—	—
On surface	4	66
Total for 1901	9	76
„ preceding year	6	71

The two worst accidents in Austria during the year 1900 happened at brown coal mines in the Brüz district, and both were primarily due to underground fires. While workmen were engaged at Frischglück colliery in damming off a fire which arose spontaneously, an explosion occurred from coal dust and carbonic oxide by which 55 persons were killed; under somewhat similar circumstances at the Pluto pits, near Wiesa, 18 persons were killed and four injured by two explosions of firedamp and carbonic oxide which took place within two hours of one another.

The Frischglück disaster induced the Government to appoint a Commission to investigate the methods of working brown coal in the Brüz district; and its report,‡ which is full of interesting details, has lately been issued.

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1901, Vienna, Part II., No. 2, p. 179.

† Do. do. do. do. pp. 283-286.

‡ Bericht der vom k. k. Ackerbau-Ministerium im Jahre 1900 eingesetzten Commission zur Untersuchung der Betriebsverhältnisse des Bergbaues im Brüzer Braunkohlenreviere, Vienna, 1902.

AUSTRIA—continued.

In the year 1901 there were only 6 explosions of firedamp in mines in Austria; they caused the death of 2 persons and serious injuries to 8. Of these 6 explosions, 1 happened in a coal mine, 2 in brown coal mines, 1 in a salt mine, and 2 in ozokerite mines.

TABLE 393.

Separate EXPLOSIONS of FIREDAMP or COAL DUST, arranged according to kind of MINES or other MINERAL WORKINGS, and cause of ACCIDENT during the Year 1901.*

Cause.	Coal.	Brown Coal.	Salt.	Ozokerite Mines and Petroleum Wells.	Total.
1. Naked lights	1	2	1	—	4
2. Flame of safety lamp driven through gauze.	—	—	—	1	1
3. Ignition of gas by underground fire	—	—	—	1	1
	1	2	1	2	6

BOHEMIA.

As Bohemia employs such a large proportion of the miners in Austria, details concerning this province have been extracted from the official reports.

TABLE 394.

PERSONS EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1900 and 1901.†

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
Coal	19,494	1,213	2,061	—	22,768	33·33
Brown coal	36,229	1,287	592	—	38,108	55·78
Iron ore	1,465	—	29	—	1,494	2·19
Other minerals	5,702	131	111	—	5,944	8·70
Total for 1901	62,890	2,631	2,793	—	68,314	100·00
.. preceding year	58,212	2,312	2,997	1	63,522	100·00

TABLE 395.

DEATHS at MINES during the Years 1900 and 1901.‡

Kind of Mines.	Number of Deaths from Accidents.	Average Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral produced per Death by Accident.
Coal	32	1·41	125,160
Brown coal	72	1·89	254,818
Iron ore	3	2·01	225,330
Other minerals	5	·84	8,146
Total for 1901	112	1·64	205,971
.. preceding year	169	2·66	128,177

* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1901, Vienna, Part II., No. 2, p. 295.

† Do. do. do. do. do. p. 121.

‡ Do. do. do. do. do. pp. 162 and 164. Also included with Austria in table on page 355.

HUNGARY.

TABLE 396.

PERSONS EMPLOYED at all MINES (including SALT MINES) and SMELTING WORKS during the Years 1900* and 1901.†

Year.	Men.	Women.	Children.	Total.
1900	67,774	1,855	6,901	76,530
1901	66,436	1,767	6,779	74,982

TABLE 397.

QUANTITY and VALUE of MINERALS and METALS produced in 1900‡ and 1901.§

Mineral, Metal, or Product.	1900.		1901.	
	Quantity.	Value, Unit = 1,000 Czs.	Quantity.	Value, Unit = 1,000 Czs.
	Metric Tons.		Metric Tons.	
Antimony ore	2,373	188·6	1,691	97·5
Antimony, crude, and regulus ...	839	612·8	705	414·6
Asphalt	2,900	305·0	2,878	302·0
Auriferous and argentiferous lead and copper ore.	131,641	3,277·2	121,970	2,933·9
Auriferous silver ore	619	159·1	773	243·2
Bismuth ore	68	41·2	32	20·9
Briquettes	69,353	1,157·8	40,183	659·7
Brown coal	5,130,077	34,331·2	5,179,829	33,994·7
Coal	1,367,190	14,486·8	1,365,717	14,580·6
Copper ore	401	110·4	693	72·4
Gold ore (washed)	6,246	713·8	6,859||	973·6
Iron ore	1,633,983	9,092·6	1,557,300	8,463·1
Iron pyrites	92,100	727·7	93,907	752·4
Iron vitriol	700	11·2	805	12·9
Lead ore... ..	3,561	762·9	3,720	721·7
Manganese ore	5,746	31·9	4,281	30·4
Petroleum	2,197	111·9	3,296	190·3
Quicksilver ore... ..	215	22·0	No Returns	—
Salt	189,363	27,283·0	184,083	28,341·0
Silver ore	1,144	71·6	861||	128·0
Sulphur	123	19·1	137	19·2
Total value in Crowns	—	93,517·8	—	92,952·1
" " £ sterling	—	£3,893,331	—	£3,869,779

* Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv*, New Series VIII., 1900, Budapest, p. 127.

† Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv*, New Series IX., 1901, p. 119.

‡ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv*, New Series VIII., 1900, Budapest, pp. 131 and 134.

§ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv*, New Series IX., 1901, pp. 123 and 126.

|| 3,293 kilos. of fine gold and 23,637 kilos. of fine silver were obtained at the Metallurgical Works in 1901.

HUNGARY—continued.

TABLE 398.

DEATHS at all MINES (including SALT MINES and SMELTING WORKS) during the Years
1900* and 1901.†

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.
1900	85	211	1.11
1901	107	317	1.43
Comparison between 1900 and 1901	+ 22	+106	+0.32

BOSNIA AND HERZEGOVINA.‡

According to Consul-General Freeman§ mining has been very prosperous, and the number of persons employed has increased considerably. Brown coal, iron ore, and salt are the chief mineral products. Other minerals known to exist are the ores of antimony, arsenic, chromium, copper, gold, lead, manganese, quicksilver, and zinc; besides asbestos, asphalt, magnesite, and petroleum.

Brown Coal.—The principal collieries are at Zenica and Kreka; they are worked by the State. The most important seams are respectively 33 feet (10 metres) and 52½ feet (16 metres) thick. The coal is of Tertiary age. Coal-mining is a new industry, for it dates back only as far as 1880; 500 tons were raised in that year, whilst in 1901 the total output had risen to 445,007 tons, of which Zenica colliery produced 157,550 tons and Kreka colliery 242,772 tons. Some is exported to towns on the Adriatic. New coal mines§ were opened at Kakanj-Doboj, near the Brodserajevo railway, and the total output of the country increased 6 per cent. in 1901.

Chromic Iron.—A large Viennese company has chromium mines at Dubostica.

Copper Ore.—The ores of this metal are mined and smelted at Sinjako.

Iron Ore.§.—The ironworks at Varèš under Government auspices are very successful, and the country's output of iron ore in 1901 was 122,569 metric tons.

Salt.—The extraction of salt from natural brine springs dates back, at least, to Roman times, and probably very much further. As in the Austro-Hungarian Empire, the industry is a State monopoly. Numerous borings have proved that the deposits near Dolnja Tuzla are capable of yielding an ample supply of brine in the future, to say nothing of rock salt. Some of the brine from Dolnja Tuzla is piped 6 miles to Lukavac, and there made into soda by the ammonia process.

* Official Return furnished by the Central Statistical Office, Budapest, and published in *Magyar Statisztikai Évkönyv*, New Series, VIII., 1900, Budapest.

† Official Return furnished by the Central Statistical Office, Budapest, and published in *Magyar Statisztikai Évkönyv*, New Series, IX., 1901, Budapest.

‡ Official Return furnished by the "Bosnisches Bureau, Montan bureau," published in the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen*, XLIX. Jahrgang, 1901.

§ "Trade of Bosnia and the Herzegovina for the year 1900," *Dipl. and Cons. Reports*, No. 2,715, Ann. Ser., 1901 [Cd. 786-19], p. 5.

BOSNIA AND HERZEGOVINA—*continued.*

TABLE 399.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1900 and 1901.

	Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.
	1900	1,105	368	334	222
	1901	1,478	311	362	237

TABLE 400.

QUANTITY and VALUE of MINERAL produced during the Years 1900 and 1901.

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Brown coal	394,515	1,562,236	445,007	1,883,807
Chrome ore	100	7,000	505	35,322
Copper ore	3,614*	54,892	4,737†	55,939
Iron ore	133,454	584,463	122,569	514,789
Iron pyrites	1,700	6,800	4,570	180,000
Manganese ore	7,938	225,000	6,346	247,498
Salt (Brine) ... (hectolitres)	1,446,048‡	115,684	1,558,581§	124,686
Total value in Florins and Crowns.	—	C. 2,556,075	—	C. 3,042,041
Total value in £ sterling	—	£106,414	—	£126,646

TABLE 401.

DEATHS at MINES during the Years 1900 and 1901.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Brown Coal...	7	—	7	—	—	—	7	4.74
Iron	—	—	—	—	—	—	—	—
Other	1	—	1	—	—	—	1	2.76
Total for 1901.	8	—	8	—	—	—	8	3.72
Total for preceding year.	9	—	9	1	—	1	10	5.53

* 606 tons of this quantity were Fahlore.

† 1,041 "

‡ Containing 15,790 " metric tons of " salt.

§ " 17,019 " " "

Banca and Billiton. (See DUTCH EAST INDIES.)

Bavaria. (See GERMAN EMPIRE.)

Belgium.

Coal mining is the most important mineral industry in Belgium; the ore mines are of little note, but the quarries of various kinds of stone have an output of considerable value.

Coal.—There are five coal-mining regions known respectively as the Couchant de Mons, Centre, Charleroi, Namur, and Liège. Of these the Charleroi region is the most productive, for it yields more than one-third of all the coal of Belgium.

Important discoveries of coal have been made by borings to the North and North East of Hasselt,* and it has been already ascertained that the new basin extends over an area of some 400 square miles; it is hoped that it will continue as far to the West as Antwerp.

There are 45 coking plants at work, which produced 2,434,678 tons of coke, besides 40 factories which produced 1,395,910 tons of briquettes.

The workings for mineral in Belgium are classified in the official statistics under three heads: (1) Coal Mines; (2) Ore Mines; (3) Quarries.

TABLE 402.

PERSONS EMPLOYED.†

Kind of Workings.	1900.			1901.‡		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal Mines	98,674	34,075	132,749			
Ore Mines... ..	633	804	1,437			
Quarries (Open and Under-ground)	—	—	37,281			
Total	—	—	171,467			

* Lambert. *Le grand bassin houiller et les nouvelles richesses minérales du Nord de la Belgique et du sud de la Hollande.* Brussels. 1902.

Stainier. "Etudes sur le bassin houiller du Nord de la Belgique." *Bull. Soc. Belge de Géologie.* Brussels, Vol. XVI, 1902, p. 77 and "Etat des Recherches dans le Bassin houiller de la Campine," *Soc. Belge de Géologie* 16 December, 1902.

Harzé. "Le bassin houiller du Nord de la Belgique," *Soc. Belge des Ingénieurs et des Industriels*, 1902."

† *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1900*, published in the *Annales des Mines de Belgique*, Vol. VI., Brussels, pp. 603, 634 and 640.

‡ Figures are not yet available.

BELGIUM—continued.

TABLE 403.

PERSONS EMPLOYED at COAL MINES during the Years 1900* and 1901.†

Year.	Under-ground.							Above-ground.							Total Under-ground and Above-ground.		
	Males.			Females.				Total.	Males.			Females.				Total.	
	Ages.			Ages.					Ages.			Ages.					
	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.	12 to 14.		14 to 16.	Above 16.	12 to 16.	16 to 21.	Above 21.				
1900 ...	2,138	4,748	91,597	—	—	191	98,674	1,230	1,452	23,517	2,589	3,787	1,500	34,075	132,749		
1901†...																	

As shown by table 405 the average output per underground worker was only 238 tons in the year 1900, compared with 374 in this country; the reason of this is the small size of the seams, which on an average are only 2 feet 2·7 inches (68 c.m.) thick.

It was pointed out in the General Report for the year 1897 that the Belgian Government had passed a law with the object of gradually putting a stop to the employment of females below-ground. The accompanying Table shows the complete success of the measures which have been taken. It is evident that within a few years female labour below-ground will become a thing of the past in Belgium. Thirty years ago, from 8,000 to 9,000 girls and women were employed in the Belgian Collieries below-ground.‡

TABLE 404.

FEMALES employed BELOW-GROUND at MINES in the Years 1891–1901.

Year.	Under 16 Years.	16 to 21 Years.	Above 21 Years.	Total.
1891	683	2,285	723	3,691
1892	219	1,957	719	2,895
1893	44	1,505	623	2,172
1894	—	1,076	542	1,618
1895	—	673	595	1,268
1896	—	291	597	888
1897	—	87	549	636
1898	—	19	405	424
1899	—	—	289	289
1900	—	—	191	191
1901				

* *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1900*, published in the *Annales des Mines de Belgique*, Vol. VI., p. 604.

† Figures are not yet available.

‡ Harzé. *Annales des Mines de Belgique*, Vol. VI., Brussels, 1901, p. 603–605

BELGIUM—continued.

TABLE 405.

COAL MINES.

THICKNESS OF COAL SEAMS, NUMBER OF PERSONS EMPLOYED, AND OUTPUT PER PERSON IN EACH DISTRICT DURING THE YEAR 1900, AND TOTALS FOR THE PREVIOUS YEAR.*

District.	Mean useful thickness of Coal Seam.	Number of Persons Employed.					Ratios.		Number of Square Metres of Seam laid bare.				Annual Output. (Metric Tons.)						Daily Output. (Metric Tons.)				
		Underground.			Above-ground.	General Total.	Of Persons Employed at the Face to those Employed Underground.	Of Persons Employed Underground to Total Number Employed.	Days worked.	In the Year.	Per Worker at the Face.	Per Day.	Per District.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Underground and Above-ground.	Per Worker at the Face.	Per other Worker Underground.	Per Underground Worker of all Classes.	Per Surface Worker.	Per Worker Above and Under-ground.
		At the Face.	Others.	Total.																				Of all Classes.
Mons ..	Metre. '54	6,158	17,233	23,391	7,075	30,466	'26	'77	300	6,055,520	983	3'28	4,527,650	735	263	194	640	149	245	'88	'65	'213	'50
Centre ..	'64	3,783	11,620	15,403	5,078	20,481	'25	'75	297	4,351,500	1,150	3'87	3,628,780	959	312	286	715	177	3'23	1'05	'79	'241	'60
Charleroi ..	'74	8,122	23,965	32,087	13,044	45,131	'25	'71	299	8,772,160	1,080	3'61	8,376,200	1,031	349	261	642	185	3'45	1'17	'87	'215	'62
Namur ..	'80	671	2,015	2,686	993	3,679	'25	'73	297	684,570	1,020	3'43	739,295	1,102	367	275	745	201	3'71	1'24	'93	'251	'68
Liège ..	'73	5,445	19,662	25,107	7,885	32,992	'22	'76	305	6,369,910	1,170	3'84	6,190,892	1,137	315	247	785	188	3'72	1'08	'81	'257	'62
Totals and Averages for 1900		24,179	74,495	98,674	34,075	132,749	'25	'74	300	26,233,660	1,085	3'62	23,462,317	970	315	238	689	177	3'23	1'05	'79	'230	'59
"	1899	22,789	69,649	92,438	32,820	125,258	'25	'74	292	24,719,170	1,085	3'72	22,072,068	968	317	239	672	176	3'31	1'09	'82	'230	'60

* Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à vapeur, pour l'année 1900, published in the *Annales des Mines de Belgique*, vol. vi., Brussels, 1901, pp. 606 and 607. Figures for 1901 not yet available.

BELGIUM—continued.

TABLE 406.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES* for the Years 1900† and 1901.‡

Mineral.	1900.		1901.‡	
	Quantity.	Value.	Quantity.	Value.
Barytes <i>Metric Tons</i>	38,800	Francs. 275,500		
China clay <i>Cubic Metres</i>	1,050	13,500		
Clay (other than } <i>Metric Tons</i>	313,205	2,177,700		
China Clay).				
Coal "	23,462,817	408,469,800		
Felspar <i>Cubic Metres</i>	1,960	15,500		
Flint for earthenware "	25,700	107,200		
Iron ore <i>Metric Tons</i>	247,890	1,320,100		
Lead ore... .. "	230	63,280		
Manganese ore "	10,820	130,350		
Marl and chalk... .. <i>Cubic Metres</i>	377,550	444,900		
Ochre and other colours .. "	300	6,000		
Phosphate of lime "	215,670	1,835,820		
Phosphatic chalk "	242,800	1,728,500		
Pyrites <i>Metric Tons</i>	400	1,140		
Sand <i>Cubic Metres</i>	653,780	1,254,980		
Slate } <i>Number</i>	43,941,000	1,644,800		
	1,410	21,250		
Stone :—				
Building stone dressed .. "	157,294	16,001,240		
Conglomerate "	380	39,500		
Dolomite "	45,000	65,250		
Flags <i>Square Metres</i>	153,217	716,715		
Gravel and broken } <i>Cubic Metres</i>	263,850	623,995		
stone.				
Hone stones and } <i>Number</i>	105,000	75,800		
scythe stones.				
Limestone <i>Cubic Metres</i>	229,250	445,560		
Marble "	15,990	2,680,700		
Millstones "	400	13,400		
Paving stone... .. <i>Number</i>	107,294,600	10,961,760		
Rough stone, broken } <i>Cubic Metres</i>	3,228,205	15,103,010		
stone, and lime.				
Tufa "	23,500	47,800		
Zinc ore... .. <i>Metric Tons</i>	8,715	556,330		
Total value in Francs	—	466,841,380		
„ „ £ sterling	—	£18,673,655		

* Excluding the two Flanders and the Province of Antwerp, which only furnish Tertiary clays for making bricks and tiles, and sand used in making glass and for other purposes.

† *Statistique des Mines, Minières, Carrières, Usines Métallurgiques et Appareils à Vapeur, pour l'année 1900*, and published in the *Annales des Mines de Belgique*, vol. vi., Brussels, 1901, pp. 616, 635, 638, and 639.

‡ Figures not yet available.

BELGIUM—continued.

TABLE 407.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1900 and 1901.*

Year.	Kind of Workings.	Under-ground.	Above-ground.	Total.	Number of Deaths per 1,000 Persons Employed.		
					Under-ground.	Above-ground.	Total.
1900	Coal mines	120	20	140	1.22	.59	1.05
"	Ore mines	—	—	1†	—	—	.70
"	Quarries (open and underground).	—	—	25†	—	—	.67
1901	Coal mines						
"	Ore mines						
"	Quarries (open and underground).						

Bohemia. (See AUSTRIA-HUNGARY.)

Bolivia.†

Bolivia is remarkable as being the great silver-producing country of South America; it likewise yields antimony, bismuth, copper, gold, manganese, and tin, besides a little borax.

Bismuth.—This mineral is obtained from the Chorolque mines in the department of Potosi.

Copper Ore.—The copper ore of the Corocoro district is rich enough to pay heavy transport expenses to Mollendo, whence it is shipped to Europe.

Gold.—The precious metal is extracted from alluvial gravels, especially in the Eastern valleys of the Cordillera Real, in the upper branches of the La Paz river, and in valleys radiating from Mount Sorata. Veins of auriferous quartz are being worked with profit in the Araca Mountain, over against Illimani.

Silver.—The richness of the silver mines of the Potosi district has become proverbial; a few years ago more than one-half of the silver was produced by the Huanchaca mines.

Tin Ore.§—There are four tin-producing districts in Bolivia, viz., La Paz, Oruro, Potosi, and Chorolque; the tin ore is obtained chiefly from veins.

* *Op. cit.*, pour l'année 1900, pp. 668 and 679. Figures for 1901 not yet available.

† Not stated whether the accident happened under-ground or above-ground.

‡ Consul St. John, "Trade, &c., of Bolivia for the year 1895." *Dipl. and Cons. Reports*, No. 1841; Ann. Ser., 1897 [C. 3277-59], Sir Martin Conway, "Some of the undeveloped resources of Bolivia." *Jour. Soc. Arts*, vol. xlviii., 1900, p. 236.

§ Pasley, "The Tin Mines of Bolivia." *Trans. Inst. M. and M.*, vol. vii., 1898-99, p. 77. Roberts, "Chorolque Tin Mines and Alluvial Deposits, Bolivia," *Ibidem*, vol. ix., 1900-01, p. 372; and Froehof "L'étain en Bolivie." *Annales des Mines*, vol. xix., 1901, p. 186.

BOLIVIA—continued.

TABLE 408.

QUANTITY and VALUE of MINERALS produced and exported through the Port of Antofagasta during the Years 1900 and 1901.*

Description of Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore	1,174	1,175,399	190	102,157
Bismuth	—	—	282	723,751
Borate of calcium	1,485	148,510	3,065	410,524
Borax	—	—	—	43
Cobalt ore	—	—	2	284
Copper, ingots	64	55,139	188	79,475
" precipitate	—	—	3	666
" matte	3,959	1,425,070	738	273,435
" ore	879	175,760	970	134,611
" and silver matte	—	—	210	126,000
Gold	Kilos. 3	5,332	Kilos. 8.4	12,795
" ore... ..	2	2,000	—	—
Lead, ingots	182	36,453	—	—
" silver	4,807	961,473	538	365,457
" " ore... ..	104	20,775	40	9,741
Silver	Kilos. 83	2,300	Kilos. 482	19,280
" ingots	2,999	149,925	" 6,483	354,228
" ore	23,237	23,236,510	37,315	19,924,112
" sulphide... ..	104	1,662,968	145	826,433
" and Bismuth ore	32	82,209	—	—
" " copper ore	6	1,265	18	4,948
Tin, ingots	10,245	3,910,516	14,932	6,864,716
" ore	76	49,371	14	675
Wolfram	124	95,376	13	10,477
Zinc ore... ..	107	107,700	—	—
Other minerals... ..	—	37,670	—	2,027
Total value in Dollars	—	33,341,721	—	30,245,835
" " £ sterling	—	£2,500,629	—	£2,268,438

Bonaire. (See DUTCH WEST INDIES)

Borneo. (See BRITISH BORNEO and DUTCH EAST INDIES.)

Bosnia. (See AUSTRIA-HUNGARY.)

Brazil.

The fact that Brazil produces gold and precious stones leads to the idea that it is an important mining country. No doubt its mineral resources are great ; but judged by the actual output they are not properly utilized. Capitalists and prospectors are discouraged by unsatisfactory mining legislation, which appears to be the main reason why the mining industry is at so low an ebb.† No official statistics are published by the Brazilian Government.

In addition to diamonds and gold, Brazil is yielding coal, iron ore, manganese ore, and monazite sand. Petroleum and the ores of copper and lead exist in workable quantities.

* Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and *Estadística Comercial de la República de Chile correspondiente al Año de 1900 and Año de 1901*, Valparaíso.

† Acting Consul-General Rhind, "Trade of Rio de Janeiro for 1893." *Dipl. and Cons. Reports*, No. 2,284, Ann. Ser., 1899 [C. 9044-110], p. 27.

BRAZIL—continued.

*Diamonds.**—Compared with the output of Kimberley, the total production of diamonds in Brazil, estimated at 40,000 carats, is at present insignificant. A powerful company has lately erected machinery for washing the diamondiferous gravel on a large scale, and a very great increase in the total output of the country is confidently expected. The most important diamond districts in Brazil are Diamantina, Grao Mogul, Chapada Diamantina, Bagagem, Goyaz, and Matto Grosso.

Gold.—The State of Minas Geraes, which contains the famous mines of St. John del Rey and Ouro preto, is the principal gold producer.

Gold has also been found in Northern Brazil† on the borders of French and British Guiana, which are both auriferous.

Iron.‡—There are large deposits of excellent iron ore in the State of Minas Geraes, and it is considered by Mr. Scott that the ore could be exported to England and the United States with profit.

Manganese§ mining is an industry of recent date in Brazil, as no ore was raised until 1894. The principal workings are at Miguel Burnier and Queluz in the province of Minas Geraes, respectively 287 miles (462 kil.) and 308 miles (496 kil.) from Rio. The ore is shipped thence to England and the United States. The exports from Rio de Janeiro in 1901 amounted to 98,828 tons. There are also mines near Nazareth, 50 miles to the west of Bahia.

Monazite Sand is obtained near the town of Prado in the north of the State of Bahia, and the quantity raised is increasing. Important finds of the mineral have been made in the State of Espirito Santo.

Phosphate of Lime.¶—It is proposed to work the phosphate of lime which exists on the Island of Rata, near the Island of Fernando da Noronha.

TABLE 409.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons. (a)	£	Metric Tons. (a)	£
Diamonds (exported) ...		22,000		—
Gold	Kilos. 5,011 ¶	683,840	Kilos. 4,012 (e)	535,000
Manganese ore	108,244 (b)	182,539 (b)	100,414 (b)	144,082
Monazite	1,481 (c)	33,990	1,643 (c) ††	33,937
Salt	16,369 (d) **	11,941	11,535 (d) ††	6,474

* Beaumont, "A Journey to the Diamond Fields of Minas Geraes." *Dipl. and Cons. Reports*, No. 2,058, Misc. Ser., 1899 [C. 9045-22], pp. 10 and 12, and United States Consular Report, No. 424, May 1899.

† Consul Churchill, "Trade of Pará for the years 1898 and 1899." *Dipl. and Cons. Reports*, No. 2389, Ann. Ser., 1900 [Cd. 1-26], p. 6.

‡ H. K. Scott, "The Iron Ores of Brazil." *Jour. Iron and Steel Institute*, Vol. LXL, 1902, p. 250.

§ H. K. Scott, "The Manganese Ores of Brazil." *Jour. Iron and Steel Institute*, Vol. LVII, 1900, p. 179.

¶ Consul Howard, "Trade of Pernambuco and District for the year 1898." *Dipl. and Cons. Reports*, No. 2,288, Ann. Ser., 1899 [C. 9044-114], pp. 9 and 10.

** *Annual Report of the Director of the United States Mint for 1901*, Washington.

†† Consul Medhurst, "Trade of Sergipe for the year 1900." *Dipl. and Cons. Reports*, No. 2,740, Ann. Ser., 1902, p. 9.

††† Consul Medhurst, "Trade of Bahia and Sergipe for the year 1901." *Dipl. and Cons. Reports*, No. 2888, Ann. Ser., 1902 [Cd. 786-192], pp. 10 and 14.

(a) Not stated.

(c) Exports of Bahia only.

(b) Exports of Rio de Janeiro and Bahia—value of exports of Bahia estimated.

(d) Exports from Sergipe only.

(e) Exports from the State of Minas Geraes only.

Bulgaria.*

Bulgaria possesses fairly rich deposits of coal and lignite; the ores of copper, iron, lead, and manganese are known to exist, but are not yet worked. Gold is obtained in many places from the sand of rivers. Limestone and marble are quarried on a small scale.

Lignite.—The State works lignite mines at Pernik and Bobovdol. The Pernik colliery is about 19 miles from the capital, with which it is connected by a railway, and it can therefore be worked to advantage. The Bobovdol colliery is far from any railway, and is worked to supply local wants only, the total output being only 2,000 tons a year.

The Trévna coalfield, 38 miles from Tirnovo, likewise lacks a railway for getting rid of its produce, and is worked on a very limited scale indeed.

TABLE 410.

PERSONS EMPLOYED at the PERNIK LIGNITE MINES.

Year.					Number of Persons Employed.
1900	...	...	...	...	2,158
1901	...	...	...	...	1,505

TABLE 411.

QUANTITY of MINERAL produced at the PERNIK MINES during the Years 1900 and 1901.

Year.					Mineral.	Quantity raised.	Value.
						Metric Tons.	
1900	...	...	...	...	Lignite ...	118,815	{ Francs ... 831,378 { £ sterling ... 33,255
1901	...	...	...	...	Lignite ...	137,194	{ Francs ... 1,188,732 { £ sterling ... 47,549

Cameroons.†

Salt.—Important brine springs are known in the Keaka district and near the Cross River.

* Official information furnished by the Chief of the Section of Mines of the Ministry of Commerce and Agriculture, Sofia.

† Buchanan, "Report on the German Colonies for the year ending 30th June. 1901." *Dipl. and Cons. Reports*, Ann. Ser. No. 2790. [Cd. 786-94]. London, 1902, p. 14.

Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinders, dug from the sides of volcanic cones, are utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England.

Limestone for local use is quarried in Fuerteventura, and to a small extent in Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

Celebes (See DUTCH EAST INDIES).

Chili.

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Other important exports are: borate of lime, coal, copper, guano, gold and gold ore, iodine, manganese ore, salt, and silver.

*Borate of Lime.**—The borate deposit of Ascotan in the interior of Antofagasta is at present the most productive in Chili; from it alone 10,920 tons were shipped in 1900. Valuable deposits, containing more than 600,000 tons of the mineral, are stated to exist within reach of the Port of Taltal.

Coal.†—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota. Still further South there is coal of Miocene age extending to the Straits of Magellan.

Copper.‡—Copper mining, once the chief mineral industry of the country, is still of considerable importance. The copper resources of the country are said to be great. The total quantity of fine copper contained in the copper produce of Bolivia and Chili exported in 1900 is stated to be 565,062 quintals (26,000 metric tons).§

Guano.—Some persons may object to recent deposits of bird dung being called minerals, but they are so treated in the official statistics. The guano beds of Guanillos, Punta de Lobos and Pabellan de Pica, lately worked by the Peruvian Corporation Ltd., have now been taken over by the Chilean Government.

Nitrate of Soda.¶—In the year 1901 there were 66 saltpetre works in operation, of which 56 were in Tarapacá; they produced 1,325,868 metric tons of nitrate of soda and 246 metric tons of iodine. Compared with the previous year there is a decrease of 181,931 tons of nitrate and 56 of iodine. The diggings and works afforded employment to 20,264 persons, of whom 14,570 were Chilians, 2,176 Peruvians, and 2,680 Bolivians; the remaining 883 persons belonged to various nationalities. The principal port at which the nitrate is shipped is Iquique; Caleta Buena comes next in importance, and then Tocopilla.

Salt.¶—A bed of salt of unknown thickness and extending over an area of more than 120 square miles, near the Punta de Lobos, is being worked on an increasing scale. The export was over 10,000 tons in 1901.

* Vice-Consul Rowley, "Trade of Chili for the year 1900." *Dipl. and Cons. Reports*, No. 2700, Ann. Ser. 1901, pp. 28 and 29.

† Consul-General Sir Barry Cusack-Smith, "Trade of Chili for the year 1899." *Dipl. and Cons. Reports*, No. 2,481, Ann. Ser., 1900 [Cd. 1-118].

‡ Rowley *op. cit.* p. 48.

§ *Memoria del Delegado Fiscal de Salitreras presentada al Señor Ministro de Hacienda en 1902*, Santiago de Chile, 1902.

CHILI—continued.

Sulphur.—Native sulphur mines near Arica are being actively worked.*

TABLE 412.

QUANTITY and VALUE of MINERALS exported during the Years 1900 and 1901.†

Description of Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony matte	—	—	1	820
Borate of Calcium	13,177	1,317,676	11,455	1,302,401
Borax	27	13,314	97	9,685
Coal	325,042	3,900,460	226	3,106
Cobalt ore	27	4,027	76	11,519
Copper, ingots	20,340	17,899,200	24,480	19,627,114
„ matte	4,838	1,935,165	2,905	1,084,727
„ ore	20,213	2,021,267	15,929	1,614,178
„ precipitate	—	—	6	2,897
Copper and Gold, ingots	139	138,720	18	2,000
„ „ „ ore	48	27,008	—	—
„ „ „ matte	—	—	14	6,422
Copper and Silver ore	239	40,722	119	46,436
Copper, Gold, and Silver ore... ..	Kilos. 360	90	Kilos. 60	500
„ „ „ „ matte	242	145,067	208	124,729
„ „ „ „ precipitate... ..	—	—	Kilos. 151	3,732
Copper and Silver matte	1,918	1,150,836	1,779	1,340,420
Gold	Kilos. 1,871	2,806,698	Kilos. 637	1,038,577
Gold ore... ..	129	57,468	66	33,696
„ precipitate	—	—	Kilos. 269	435,179
Gold and Silver ores	217	34,249	196	42,710
„ „ „ matte	23	23,522	—	—
„ „ „ precipitate	Kilos. 235	7,464	—	—
Guano	34,435	1,377,400	8,250	329,924
Iodine	318	4,043,172	285	3,559,075
Lead	—	—	14	5,840
Lead ore	4	645	—	—
Lead, silver	14	6,706	441	197,396
Lime	—	10	6	179

* Rowley, *Op. cit.*, p. 57.

† Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and published in the *Estadística Comercial de la República de Chile correspondiente al año de 1900*, Valparaíso, 1901, p. 345, and corresponding publication for 1901, Valparaíso, 1902, pp. 157-160.

CHILI—continued.

TABLE 412—continued.

QUANTITY and VALUE of MINERALS exported during the Years 1900 and 1901—cont.

Description of Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
Manganese ore	Metric Tons. 25,715	Dollars. 761,406	Metric Tons. 18,480	Dollars. 554,409
Nickel ore	Kilos. 725	1,450	—	—
Nitrate of Soda... ..	1,465,935	109,945,156	1,291,958	118,860,131
Salt.	14	715	11	409
Silver, ingots	Kilos. 45,438	2,499,116	Kilos. 46,164	2,690,049
„ ore	225	130,957	6,166	4,929,315
„ matte	25	25,300	—	—
„ precipitate	Kilos. 140	5,332	Kilos. 3,467	204,783
„ sulphide... ..	172	863,332	264	872,779
Silver and Lead ores	1	218	—	—
Sulphur... ..	—	—	9	854
Tin	Kilos. 170	102	4	2,604
Zinc Auriferous	Kilos. 1,159	23,180	—	—
„ Argentiferous	14	408,840	—	—
Other Minerals... ..	—	24,158	—	5,612
Total Value in Dollars ...	—	151,640,148	—	158,944,207
„ „ „ £ sterling ...	—	£11,373,011	—	£11,920,815

China.*

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of antimony, copper, gold, iron, lead, quicksilver, silver, tin, and zinc, besides petroleum, salt, and sulphur. A good general idea of the distribution of the mineral wealth of China is obtainable from a map accompanying some articles by Mr. Lynwood Garrison.†

The coal-fields of north-eastern China, and especially those of western Chili and eastern Shansi, have lately been described by Mr. Drake.‡

* The "salt wells of China." *Jour. Soc. Arts*, Vol. XLVI., 1898, p. 385.
 Fearon and Allen.—"The Chinese, and recent industrial progress in China." *Eng. Mag.*, Vol. XVI., 1898, p. 166.
 M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.
 Jameson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 365.
 Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV., 1898, p. 491.
 † The Mining and Industrial Development of China " *Mining and Metallurgy*, Vol. XXI., 1901, p. 65.
 ‡ *Trans. Am. Inst. M.E.*, vol. xxxi., 1901.

CHINA—continued.

The province of Sze-chuan,* in the extreme west, is remarkable for its salt and natural gas. The annual output of the brine wells of Tze-liu-ching in Sze-chuan is estimated to be about 178,000 tons of salt.

The province of Chi-li† has yielded gold for many centuries. The metal occurs in quartz veins and in alluvial deposits; the output in 1898 was 50,000 ozs.

Coal and the ores of iron, lead and silver are said to abound in the province of Fohkien.‡

The province of Kwei-chau§ is rich in coal, ores of copper, iron, and quicksilver.

The province of Shan-si|| is remarkable for its great wealth of coal. At the present time the workings are comparatively shallow, and all the winding is done by hand. The total annual output, reckoned at 50,000 tons, is therefore no index of the great resources of the coalfields.

The province of Shan-tung¶ possesses deposits of coal, copper, diamonds, gold, iron, lead, and silver. The first-named mineral is the most important, and is already worked on a small scale and in a very primitive fashion in various parts of the province. No shaft is more than 30 yards (28 m.) deep, and the usual depth is only about 20 yards. It is expected that the harbour of Kiao-chou will shortly be connected by rail with the Wei-hsien coalfield, the first of importance.** An extensive bed of hæmatite in the neighbourhood of the I-chou-fu coalfield, which can be worked opencast, may be of importance to Kiao-chou in the future.

Consul Jamieson,†† while admitting the great mineral wealth of the province of Yunnan, is of opinion that the difficulties in the way of working are so formidable that capital cannot be profitably employed in mining enterprises, at least in the southern and western sections of the province. Some of the important tin mines‡‡ of Yunnan are situated near Mengtse, not far from the boundary of French Tonquin. Salt is produced from mines and brine wells near Pu Erh, and some of it is exported into the British Shan States and French Laos.§§

No mineral statistics are published by the Chinese Government.

The Director of the United States Mint states that 8,387 kilos. of fine gold of the estimated value of £1,144,641 were produced in 1899.||||

Cochin China. (See INDO-CHINA.)

Colombia.¶¶

Coal.—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

Copper.—Deposits of copper ore are known to exist, but they are unworked.

Emeralds.—The famous mines of Muzo have been worked continuously to obtain this gem for more than three centuries.

Gold.—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

* Uperaft.—"The Salt Wells of Sze-chuan, China." *Eng. Min. Jour.* Vol. LXIX., 1900, p. 525; and Murdoch—"Notes on Brine and Oil Wells in Western China." *Trans. Inst. M. and M.*, Vol. IX., 1900-1, p. 362.

† Hoover—"Metal Mining in the Provinces of Chi-li and Shantung, China." *Proc. Inst. Min. and Met.* Vol. VIII., 1900, pp. 324-331.

‡ Consul Mansfield—"Trade of Amoy for the year 1899." *Dipl. and Cons. Reports.* No. 2502. Ann. Ser. 1900 [Cd. 1-139], p. 8.

§ Prospectus of the Anglo-French Quicksilver and Mining Concession (Kwei-chau province) of China, Ltd., March 1899.

|| Drake—"The Coalfields around Tse Chou, Shan-si." *Trans. Amer. Inst. M. E.* New York, 1900.

¶ Buchrucker, "Ueber eine bergmännische Forschungsreise in der Provinz Schantung." *Zeitschr. f. prakt. Geologie*, 1899, p. 206.

** Consul Hopkins, "Trade of Chefoo for the year 1898." *Dipl. and Cons. Reports.* No. 2,307, Ann. Ser. 1899 [C. 9044 133], p. 11.

†† China, No. 3 (1898). *Consular Report on the trade of Yunnan.* [C. 9083] 1898.

‡‡ Litton—"Trade of Ssumao and Mengtse." *Dipl. and Cons. Reports.* No. 2,542 Ann. Series, 1900 [Cd. 429], p. 7.

§§ Acting-Consul Carey—"Trade of Ssumao and Mengtse for the year 1900." *Dipl. and Cons. Reports.* No. 2741. Ann. Ser. 1902 [Cd. 786-45], p. 5.

|||| *Report of the Director of the United States Mint for 1900.* Washington, 1901.

¶¶ Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898.

COLOMBIA—continued.

*Manganese ore.**—This ore is worked about 40 miles east of Colon.

Salt.—Rock salt is mined near Bogota.

TABLE 413.

QUANTITY and VALUE of GOLD, MANGANESE ORE, and SILVER produced during the Years 1899 and 1900.

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
		£		£
Gold (Fine)† Kilos.	2,723	371,561	1,798	245,359
Manganese ore‡ Metric Tons	10,160	(Not stated.)	(Not stated.)	—
Platinum‡ Kilos.	311	(Not stated.)	(Not stated.)	—
Silver (Fine)† Kilos.	109,555	433,860§	57,994	237,331§

Congo Free State.||

No mines have as yet been worked by Europeans ; but the natives of the Upper Congo dig a little iron ore and copper ore, and extract the metals for the purpose of making weapons, tools and utensils.

Corea.

Corea appears to be rich in minerals, especially in the province of Ping-Yang, where coal and gold are being worked. Large deposits of smokeless coal exist in the country.¶

According to the consular report,** the value of the gold exported from Corea in 1901 was £509,738, but these figures do not include the value of the gold carried away by persons in their luggage. The gold is mainly obtained from quartz mines worked by American and European companies. The Gwendoline mine in the Unsan district employs 736 persons, and another gold mine at Tangokae, or Kimo Song, employs more than 500.

Costa Rica.††

There are two groups of gold mines near the Pacific Coast which are being worked regularly, viz., the Bella Vista Group near Miramar, 15 miles from Puntarenas, and the Abangares group, 18 miles from Puerto Yglesias on the Gulf of Nicoya. The value of the gold from the mines exported during the year 1901 amounted to £27,362, according to the official return.

* *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.

† *Report of the Director of the United States Mint for 1901*, Washington, 1902.

‡ *The Mineral Industry*, Vol. IX., 1900, by R. P. Rothwell, New York and London, 1901.

§ Commercial value of fine silver.

¶ Information furnished by the Département des Finances, Brussels.

** *Eng. Min. Jour.*, Vol. LXVII., 1899, p. 676.

¶ Goffe, "Trade of Corea for the year 1901." *Dipl. and Cons. Reports*, No. 2,849, Ann. Series, 1902 [Cd. 786-153], p. 9.

†† Consul Cox, "Report on the Trade of Costa Rica for the year 1901." *Dipl. and Cons. Reports*, No. 2,776, Ann. Series, 1902 [Cd. 786-80].

Cuba.*

The following minerals have been more or less constantly mined in Cuba :—

Asphalt and Petroleum.—There are large deposits in several places.

Clay.—Clay fit for making bricks and tiles is abundant.

Copper ore.—Copper ore has been mined on an extensive scale, particularly at Cobre, in the province of Santiago de Cuba. It occurs in many places in the eastern part of the island.

Gold.—This metal is said to abound in the provinces of Santa Clara and Santiago.

Iron ore.—The latter province possesses extensive deposits of iron ore. The Spanish-American Iron Co. and the Juragua Iron Co. are the principal producers; their combined exports in 1901 amounted to 534,597 tons. The total quantity exported from the Island during the year was 552,248 tons.

Limestone.—This rock abounds everywhere.

Manganese ore.—This ore was mined in 1901 by two companies in the South-eastern portion of Cuba, and the produce shipped from the port of Santiago. The output for that year was 25,183 tons, most of this quantity being exported to the United States.

Curaçao. (See DUTCH WEST INDIES.)

Denmark.†

Chalk and calcareous marl are quarried near Aalborg. The annual output is from 12,000 to 15,000 tons.

Bog iron ore exists in Jutland,‡ and in years gone by it was occasionally worked and smelted on a small scale.

FAROE ISLANDS.§

For at least two centuries it has been known that the island of Suderö possesses deposits of coal, and it is now rumoured that they will be worked.

GREENLAND.||

The quantity of cryolite obtained from Ivigtut during the year 1900 was 8,960 tons, and in 1901 was 7,997 tons.

During the summer months 107 persons were employed in 1900, and 113 in 1901. These numbers were reduced during each winter by about 42 and 65 men respectively.

No accidents occurred during the years 1900 or 1901.

ICELAND.

A bed of coal has recently been discovered at Nordfjord, in Iceland.

A small quantity of transparent calc spar for optical instruments is exported annually.

* Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines." *Eng. Mag.*, Vol. XVII., 1899, p. 242. Swank, "The American and Foreign Iron Trades in 1899." *U.S. Geol. Survey*, Washington, 1900. Day, "Mineral Resources of the United States." *U.S. Geol. Survey*, Washington, 1902.

† Consul Boyle, "Trade and Agriculture of Denmark for the year 1898." *Dipl. and Cons. Reports*, No. 2,141, Ann. Series, 1898 [C. 9044-127].

‡ *Glückauf*, Vol. XXXIV., 1898, p. 872.

§ "Die Kohlen auf den Faröer." *B.u.h. Zeitung*, Vol. LX., 1901, p. 162.

|| Official Report furnished by the Danish Government.

Dutch East Indies.*

Many of the Dutch Colonies in the East Indies contain valuable mineral deposits, which are being worked on a large scale.

BANCA.

The alluvial diggings of the Island of Banca still yield large quantities of tin ore, and the output is increasing.

TABLE 414.

Year.	Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons.
1898-99	14,150	192,973	11,870
1899-1900	14,269	185,974	11,477
1900-1901	14,447	202,728	12,511

The number of persons in the table includes not only the actual diggers of the ore, but also the charcoal burners and the smelters.

BILLITON.

Like Banca, its neighbour Billiton is a large producer of tin ore.

TABLE 415.

Year.	Average Number of Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons.
1898-99	7,553	91,912	5,612
1899-1900	6,227	79,572	4,858
1900-1901	6,409	80,203	4,897

In addition to the tin ore 1,173 pikols (72 tons) of wolfram were produced.

BORNEO.

Coal.—The mines of Mahakkam River at Kutei in South-Eastern Borneo produced 15,221 metric tons of coal in 1898, and 3,910 in 1899, and 4,191 tons in 1900. Small quantities of coal are raised at Salimbau in Western Borneo, in fact only 300 tons in 1897 and 1898.

* *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië*. Dertigste Jaargang, 1901. Batavia 1901, and Official Return furnished by the Colonial Department of the Dutch Government.

DUTCH EAST INDIES—BORNEO—*continued.*

Diamonds.—The estimated output of diamonds from Western Borneo was 1,950 carats in 1898 and 1,972 carats in 1899. Profitable diamond diggings were discovered by chance in the Martapura district of Southern and Eastern Borneo.

Gold.—There are three well marked auriferous districts in the island, viz., Sambas in Western Borneo, a second at the sources of the Kehajang and Kapuas rivers in Central Borneo, and a third in the south-eastern corner of the island.*

The output of gold from the Western Division of Borneo was 2,197 $\frac{3}{4}$ thail, or 118 kilograms, valued at fl. 148,297 in 1898; 1,916 thail, or 103 kilograms in 1899; and 1136 thail, or 61 kilograms in 1900. The gold diggers are mostly Chinamen. 962 thail, 52 kilograms, were produced in other localities.

*Petroleum.**—Borneo has lately become a producer of mineral oil. The oil-field is situated in the Sultanate of Kutei, a Dutch protectorate on the East Coast of Borneo. The oil production is already large and has sometimes exceeded 1,000 tons a day. The crude oil is either refined on the spot or shipped direct from Balek Pappan. Steamers are using the crude oil as fuel, and also the liquid residue from the petroleum refineries.

CELEBES.†

Gold.—The precious metal has long been worked by the natives in the northern arm of the island, and within the last decade several European companies have been formed for the purpose of conducting operations on a larger scale.

JAVA.‡

Among the mineral productions of Java may be named coal, gold, iodine, manganese ore, and petroleum.

Coal.—798 tons of coal were produced from a mine in the Sedan district during the year 1895–96.

Gold.—The natives, especially the women, obtain some gold by washing river sand in wooden bowls. Several gold mining companies have been started with European capital, and rich gold ore is being exported to Liverpool.

Iodine.—The Gunong Kendeng district has springs containing iodides in solution, from which 2,623 kil. of crude iodide of copper were manufactured in 1898, 2,346 kil. in 1899, and 2,545 kil. in 1900.

Manganese.—Manganese ore is produced in the regencies of Pengasih and Nanggoelan. The output was 4,800 tons in 1898 and 1,388 tons in 1899.

Petroleum.—Petroleum occurs in various parts of the island, and is obtained on a large scale by borings. The combined output of the wells at Wonokromo and Blora was 1,647,114 cases in 1900, and 1,679,756 cases in 1901 (1 case = 37.8 litres).

* *Petroleum*, Vol. I., London, 1900, p. 179.—*Shipping and Mercantile Gazette* and *Lloyd's List*, London, 22nd June, 1900.

† Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies" *Trans. Inst. M. and M.* Vol. X., 1901, with map.

‡ Consul Davids, "Trade of Java for the Year 1901." *Dipl. and Cons Reports*, No. 2863, Ann. Series, 1902 [Cd. 786–167], p. 9; and Official Return furnished by the Colonial Department of the Dutch Government.

DUTCH EAST INDIES—continued.

SINGKEP.*

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

TABLE 416.

Year.	Number of Mines at Work.	Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1898-99	15	2,032	11,237	678
1899-1900	(a)	(a)	9,533†	575
1900-1901	16	1,911	13,152	793

(a) Not stated.

About two-thirds of the persons were engaged at the tin diggings proper, and one-third in getting charcoal and smelting the ore.

SUMATRA.*

Coal.—The Dutch Government is working collieries in the Ombilien coalfield, which is now connected by rail with the port of Padang. One of the principal seams is 10 feet thick, and the other from 26 feet to 39 feet. The coal is said to be very free from ash.

Gold.†—The principal gold workings are at Redjang Lebong in the south-west part of the island, and during the year 1900 they yielded 11,253 ozs. (350 kil.) of fine gold and 73,947 ozs. (2,300 kil.) of fine silver. Two other undertakings Soemalata I. and Palaleh also yielded some gold and silver.

Petroleum.—Sumatra's principal petroleum wells are on the east coast at Langkat; they yielded 5,479,694 cases (1 case=37.8 litres) of refined petroleum in 1898 and 2,543,050 in 1899. The oil is exported to the Straits Settlements, Burmah, Siam, Cochin China, and elsewhere.

TABLE 417.

NUMBER OF PERSONS EMPLOYED and QUANTITY OF COAL PRODUCED at COAL MINES in 1900 and 1901.

Year.	Number of Persons Employed.	Quantity of Coal produced.	
		Metric Tons.	
1900	2,616	196,206	
1901	(Not stated)	198,129§	

Dutch Guiana or Surinam.||

According to Du Bois¶ mining in Dutch Guiana at the present time is confined almost entirely to the working of gold deposits of secondary origin.

The estimated quantity of gold produced in 1899 was 893 kilograms, valued at fl. 1,223,680 or £101,973, and in 1900, 876 kilograms valued at fl. 1,200,120 or £100,010.

* Official Return furnished by the Colonial Department of the Dutch Government and *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië* Dertigste Jaargang, 1901. Batavia, 1901.

† Including 269 pikols from Kedah, Malacca.

‡ Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X., 1901, with map.

§ Consul Davids "Trade of Java for the year 1901." *Dipl. and Cons. Reports*, No. 2863, Ann. Ser. 1902 [Cd. 786-197], 1902, p. 9.

|| Official Return furnished by the Colonial Department of the Dutch Government and Consul Pigott "Trade of Dutch Guiana, for the year 1900." *Dipl. and Cons. Reports*, No. 2856, Ann. Ser., 1901 [Cd. 429-114], 1901.

¶ *Geologisch-bergmännische Skizzen aus Surinam*. Freiberg in Sachsen, 1901.

Dutch West Indies.*

ARUBA.

Gold mining is carried on by an English company. At present the output is small.

Phosphate of lime was quarried with great profit between the years 1884 and 1892; in spite of lower prices the deposits are still being worked, and the quantity exported in 1899 was 12,476 tons (20,620 cubic metres), 1900, 12,075 tons (20,927 cubic metres), and in 1901 only 10,413 tons; about one half of the quantity shipped comes to Great Britain.

BONAIRE, AND ST. MARTIN.

Salt is obtained by the natural evaporation of sea water at both these islands. In 1899 the export of salt from Bonaire was 28,928 barrels, valued at fl. 14,464 or £1,205, and in 1900 was 112,523 hectolitres, valued at fl. 109,626, or £9,135. From St. Martin in 1899 the export was 24,414 hectolitres, valued at fl. 17,334 or £1,444, and in 1900 28,657 hectolitres, valued at fl. 14,695 or £1,225. A trial cargo of manganese ore was shipped to the United States in 1900; but the result appears to have been unfavourable.

CURAÇOA.

The phosphate of lime mines in this island have been at a standstill since 1895. In 1901, 83,602 barrels of salt, valued at £8,642, were exported from Curaçoa.

SABA.

The sulphur deposits are no longer worked.

Ecuador.†

It is said that gold abounds, though the yearly output is small. It is obtained mainly from alluvial deposits, but the auriferous veins are being tested on a commercial scale.

There are also deposits of anthracite, copper ore, petroleum, salt, and silver ore.‡

It is not surprising that one article of commerce of a country possessing active volcanoes should be pumice stone. It is cut up for sale into lumps like bricks.

TABLE 418.
ESTIMATED QUANTITY and VALUE of GOLD and SILVER produced in 1900§.

1900.			
Fine Gold.		Fine Silver.	
Quantity.	Value.	Quantity.	Commercial Value.
Kilos. 162	£ 22,115	Kilos. 240	£ 986

* Official Return furnished by the Colonial Department of the Dutch Government and Consul Jesurun "Trade of Curaçoa and its Dependencies for the year 1901." *Dipl. and Cons. Reports*, No. 2,902, Ann. Ser., 1901 [Cd. 786-206], 1902, p. 19 and p. 24.

† Consul Söderström, "Trade of Quito for the year 1897." *Dipl. and Cons. Reports*, No. 2,101, Ann. Ser., 1898 [C. 8648-123].—Consul Chambers, "Trade of Guayaquil for the year 1898." *Dipl. and Cons. Reports*, No. 2,246, Ann. Ser., 1899 [C. 9044-72].

‡ *Mining Journal*, Vol. LXX., 1900, p. 620.

§ *Report of the Director of the United States Mint for 1901*, Washington 1902.

Egypt.

Gems.—The turquoise mines at Wady Maghara in the peninsula of Sinai are no longer being worked by the English Company.

*Gold.**—Prospecting is being carried on actively over a large tract of country between the Nile and the Red Sea. It is evident from the remains of old workings that very considerable quantities of gold were extracted from quartz reefs in ancient days; but it has yet to be proved that the mines can be worked with profit at the present time.

Petroleum.†—The mineral oil at Jebel Zeit on the west shore of the Gulf of Suez has again been examined with a view to ascertaining whether it is worth working.

Phosphate of Lime.‡—Large deposits of phosphate of lime have been discovered in several parts of the country in rocks of Crataceous age. Those near Kosseir* have been traced for a distance of 40 miles.

Salt.§—The natural evaporation of the waters of Lake Mareotis leaves a considerable quantity of salt, and this source of supply is still largely utilized as it has been for many years past. The mineral is likewise being obtained on a large scale, and with profit, near Wady Natroun. Some large salt pans have been constructed near Port Said for the purpose of making salt from sea water; they are stated to be capable of producing 150,000 tons yearly.

Soda.—It is stated in the Annual Report of the Egyptian Salt and Soda Company, Ltd., that large quantities of natural soda will soon be obtained from the lakes at Wady Natroun, which yielded the mineral to the ancients.

Stone.—Granite, sandstone, and limestone are quarried.

SOUDAN|| (see also FRENCH SOUDAN).

The possible mineral wealth of the Soudan is practically unknown. Gold mines were once worked in the mountains south of Fazogl. Iron ore is found in Bahr-el-Ghazal Province and also in Darfur.

Faroe Islands (see DENMARK).

Eritrea.

Gold mines are being worked in this Colony by an Anglo-Italian Company.

Formosa.¶

The Island of Formosa contains deposits of coal, gold, sulphur, and petroleum.

Coal.—In 1901 there were 73 collieries in the Kelung district, with a total output of 62,547 tons.

Gold.—Three gold mines worked in the Kelung district yielded 1,632 oz. (51 kilos.) in 1901. Gold in fair quantity is likewise obtained by washing the banks and bed of the Kelung river.

* Alford, *Second Annual Report of the Egyptian Mines Exploration Co., Ltd.*, London, 1902.

† U.S. Consul-General Long. *Consular Reports*, No. 237, Vol. LXIII., June, 1890.

‡ "A report on the Phosphate deposits of Egypt." *Geological Survey, Public Works Ministry*, Cairo, 1900.

§ *Prospectus of the Egyptian Salt and Soda Company, Ltd.*, 6th November, 1899, and First Annual Report of the Company for 1900, and Consul Cameron "Trade of Port Said and Suez for the Year 1901." *Dipl. and Cons. Reports*, No. 2867, Ann. Ser., [Cd. 756-171], 1902, p. 4.

|| Despatch from H.M. Agent and Consul-General at Cairo, enclosing a Report on the Soudan by Sir W. Garstin, K.C.M.G.—Egypt, No. 5 (1899) [C. 9332].

¶ Consul Layard "Trade of North Formosa for the Year 1901." *Dipl. and Cons. Reports*, No. 2869, Ann. Ser., [Cd. 786-173], 1902, p. 12.

France

Antimony.—Sulphide of antimony is worked in four departments on the mainland and also in Corsica.

*Bauxite.**—Southern France possesses rich mines of bauxite; in the Department of the Var alone there are 31 mines of this mineral.

Coal.†—The extraction of fossil fuel is the most important mining industry in France, for 91 per cent. of the persons employed in and about mines in 1901 were workers at collieries. Another index of its importance is the value of the products. The value of the fossil fuel produced in 1901 was more than 90 per cent. of the value of the total output of all the mines.

The two great coal-producing departments are the Pas-de-Calais and the Nord. The former yielded nearly 14 million tons, and the latter nearly 6 million; the two departments together produced over 19 million tons, or 61 per cent. of the total output of the country. Next in importance is the Loire Basin with nearly 4 million. Leseure's historical account‡ of this colliery district is full of useful and interesting matter.

The total quantity of brown coal produced during the year 1901 amounted to 692,000 tons, or an increase of 9,000 tons. The quantity of peat obtained in 1901 was more than in the previous year.

The Central Committee of French Coal Mines, in its year book for 1902,§ publishes much valuable information concerning the mines, together with a reprint of the laws affecting mines and mining.

Iron ore.†—There are three main iron ore districts (1) the North-east, or Meurthe-et-Moselle, which yields $4\frac{1}{2}$ million tons out of a total of $5\frac{1}{2}$ million; (2) the Pyrenees, which give $\frac{1}{4}$ million tons; and (3) Normandy, with an output of 150,000 tons. Iron mining in Normandy is an industry of comparatively recent date. Its geographical position enables it to supply ore for export, whilst the other iron districts furnish ore for home consumption.

Iron pyrites.—Nearly all the iron pyrites is the produce of the Sain-Bel mines (Rhône).

Lead ore.—The principal lead mine is at Pontpéan in Brittany.

Manganese ore.—Carbonate of manganese is worked at Las Cabesses mine (Ariège). The output for 1901 was 3,500 tons of calcined carbonate. Pyrolusite is obtained at the Romanèche and Grand-Filon mines (Saône-et-Loire). The output was 9,600 tons.

Phosphate of Lime.—M. David Levat|| has recently made some interesting discoveries of black phosphate of lime in the Pyrenees.

Salt.—Much of the salt comes from a thick bed of rock salt in the Upper Trias in the department of Meurthe-et-Moselle. The bay-salt is the result of the evaporation of sea-water in marshes on the shores of the Atlantic and the Mediterranean.

Stone.¶—A very large quantity of road metal is supplied to South-east England from quarries at Cherbourg. The stone, which is often called granite, is in reality quartzite.

Zinc ore.—The two largest workings for zinc are those of Malines (Gard) and Bormettes (Var).

** A Bill has been prepared with the object of limiting the period of labour at collieries to eight hours per day, reckoning this period as the interval which elapses between the descent of the last cage at the beginning of the shift and the ascent of the first cage at the end of the shift. It is proposed further that temporary or permanent exemptions from this law should be granted, with the object of allowing the shift to be lengthened either for all the workmen of a certain mine or a certain class of workmen.

* Consul General Gurney, "Trade of Consular District of Marseilles for the year 1901." *Dipl. and Cons. Reports*, No. 2855, Ann. Ser., [Cd. 786-159], 1902.

† *Journal Officiel de la République Française*, 2nd June, 1902, p. 3792.

‡ *Historique des Mines de Houille du Département de la Loire*. Saint Etienne, 1901.

§ *Comité Central des Houillères de France. Annuaire*, 1902. Paris, 1902.

|| *Annales des Mines*, Vol. XV. Série 9, 1899, pp. 5-100.

¶ Consul Loftus, "Trade of Cherbourg for the years 1899 and 1900." *Dipl. and Cons. Reports*, No. 2670, Ann. Ser., [Cd. 429-128], 1901.

** *Journal Officiel de la République Française*, 2nd June, 1902, p. 3795.

FRANCE—continued.

TABLE 419.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1900 and 1901.*

1900.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	6,025	7,173	103,305	116,403	4,440	2,973	5,719	32,539	45,676	162,079
Other mines	65	247	11,386	11,698	227	295	510	4,065	5,117	16,815
Total	6,090	7,420	114,591	128,101	4,667	3,273	6,229	36,604	50,793	178,894

1901.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	6,351	7,308	103,376	117,035	4,391	2,737	5,781	33,608	46,461	163,496
Other mines	67	192	11,119	11,378	235	289	433	3,961	4,918	16,296
Total	6,418	7,400	114,995	128,713	4,526	3,076	6,214	37,569	51,379	180,092

TABLE 420.

PERSONS EMPLOYED at QUARRIES during the Years 1900 and 1901.*

Kind of Quarries.	1900.			1901.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Underground	13,090	9,072	22,162	13,228	8,783	22,011
Open	—	108,759	108,759	—	110,418	110,418
Total	13,090	117,831	130,921	13,228	119,201	132,429

* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1900 and pour l'année 1901.

FRANCE—continued.

TABLE 421.

QUANTITY and VALUE of the MINERALS raised from MINES and WORKINGS other than QUARRIES during the Years 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Anthracite	1,764,000	—†	1,577,000	—†
Antimony ore	7,843	564,015	9,867	784,168
Arsenic	4,705	182,783	7,491	189,862
Bituminous shale, limestone, &c. ...	266,474	1,917,149	249,655	1,864,944
Brown coal	682,736	7,436,569	691,714	7,821,485
Coal	30,957,000	491,810,070†	30,056,588	499,340,519†
Copper ore	3,031	755,451	3,413	563,918
Gold quartz	50	2,100	170	2,970
Iron ore... ..	5,447,694	20,578,620	4,790,732	17,659,661
Iron pyrites	305,073	3,899,626	307,447	3,965,290
Lead ore, argentiferous	24,276	3,608,599	20,644	2,814,814
Manganese ore	28,992	850,449	22,304	475,125
Peat	95,630	1,434,941	118,433	1,745,656
Salt { Rock salt and salt from brine Salt contained in brine used } for making soda	289,169	5,402,122	295,392	6,368,379
	314,893	1,889,358	269,630	1,617,780
	484,572	4,788,385	345,328	4,145,552
Sulphur-bearing limestone	11,551	132,133	6,836	81,536
Zinc ore	67,059	6,111,498	61,539	3,292,981
Total value in Francs	—	551,363,868	—	552,734,640
„ £ sterling	—	£22,054,555	—	£22,109,386

TABLE 422.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Aluminous earth	495	1,734	505	10,450
Amblygonite	43	22,899	—	—
Amethyst	45	31,500	45	31,500
Barytes	3,635	52,413	4,145	47,650
Bauxite	58,530	462,980	76,620	620,840
Cement	1,147,670	28,981,601	1,127,206	28,048,869
Chalk	41,460	659,950	41,040	583,375
Clay { China clay Fireclay Potter's clay White clay for Stucco	75,040	1,562,478	73,625	1,622,987
	329,561	1,699,755	293,208	1,725,783
	5,203,187	6,856,101	5,360,489	7,089,392
	248	14,725	320	16,960
Flagstone	59,633	1,397,768	56,633	1,301,600
Fluor spar	3,430	51,705	3,970	57,770
Fuller's earth	3,700	17,900	3,400	17,000

* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1900, and pour l'année 1901.

† Value included with coal.

‡ Including value of anthracite.

FRANCE—continued.

TABLE 422—continued.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1900 and 1901.*—continued.

Mineral.					1900.		1901.	
					Quantity.	Value.	Quantity.	Value.
					Metric Tons.	Francs.	Metric Tons.	Francs.
Gypsum	{	Plaster	...	...	1,417,845	13,083,710	1,635,210	15,728,556
		Manure	...	...	192,916	963,399	355,955	1,692,688
Lignite (Pyritiferous)...					19,470	87,615	17,260	77,670
Lime					4,669,241	41,680,518	4,747,583	42,976,387
Lithographic stone					454	55,030	1,030	35,500
Magnesium carbonate...					80	4,000	95	3,800
Marble					154,414	6,140,331	123,506	4,962,043
Marl					1,040,805	1,281,757	1,083,372	1,335,234
Millstones					41,103	3,651,169	33,286	1,454,565
Ochre					33,080	820,000	35,704	1,379,851
Onyx					330	28,800	2,250	151,293
Paving stone					599,492	10,235,965	547,831	9,437,652
Phosphate of lime					587,919	14,136,455	535,676	13,072,714
Sand, gravel, and flint					5,208,284	8,654,946	5,491,916	9,570,225
Slate	{	Roofing	...	...	290,204	17,199,924	288,508	17,197,175
		Slabs	...	...	1,325	197,000	1,304	192,800
Steatite, talc, and asbestos					5,398	190,670	11,395	395,400
Stone for building					9,974,347	48,061,954	10,277,098	48,639,061
,, (broken for ballast)					12,229,398	25,904,854	12,497,727	25,446,088
,, for mosaic work					2,500	62,500	2,554	64,000
Whetstones					1,929	395,242	486	39,136
Total value in Francs					—	234,649,348	—	235,026,014
,, £ sterling					—	£9,385,974	—	£9,401,041

TABLE 423.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.*

Kind of Mines.	1900.						1901.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Anthracite, brown coal, and ccal.	189	41	230	1'62	'89	1'42	164	54	188	1'40	'73	1'21
Other mines ..	28	2	30	2'38	'39	1'78	24	5	29	2'11	1'02	1'78
Totals ..	217	43	260	1'69	'84	1'45	188	59	227	1'46	'76	1'26

* Statistique de l'Industrie Minière en France et en Algérie pour l'année, 1900, and pour l'année 1901.

FRANCE—continued.

TABLE 424.

DEATHS from ACCIDENTS at QUARRIES during the Years 1900 and 1901.*

Kind of Quarries.	1900.						1901.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Underground ..	50	—	50	3.72	—	3.72	36	3	39	2.72	34	1.77
Open	—	127	127	—	1.15	1.15	—	95	95	—	86	85
Total	50	127	177	3.72	1.15	1.28	36	98	134	2.72	82	1.01

† The number of deaths from accidents in coal mines has slightly increased during the last few years. The mortality figures per 1,000 persons employed below ground, which are lower than the corresponding figures for most neighbouring nations, are as follows :—

1896	...	...	...	...	1.62 per 1,000
1897	...	...	...	...	1.34 „
1898	...	...	...	...	1.26 „
1899	...	...	...	...	1.62 „
1900	...	...	...	...	1.62 „
1901	...	...	...	...	1.40 „

In the years 1899 to 1901 there were four bad accidents, which luckily were not comparable in their effects to the big fire-damp explosions ; since 1891 there has been no really great disaster from this cause.

The four accidents referred to were as follows :—

TABLE 425.

Date.	Name of Mine.	Number of Persons Killed.	Cause of the Explosion.
1899 ...	Plat-de-Gier	16	Breaking of rope.
1900 ...	Tréllys	16	Issue of carbonic acid gas.
„ ...	Aniche	21	Explosion of underground dynamite store.
1901 ...	Bessèges	9	Explosion of fire-damp.

* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1900, and pour l'année 1901.*

† *Journal Officiel de la République Française*, 2nd June, 1902, p. 3793. The death-rates given above are taken from official sources, but are not those quoted in the newspaper, in which the mistake has been made of giving mortality figures for all workers below and above ground instead of those for the underground workers only.

French Guiana.*

Like the other Guianas, the French Colony is auriferous, and it is probable that its resources as a gold-producing country are to a great extent undeveloped.

The output of gold in 1901 was 4,021 kilos.

TABLE 426.

QUANTITY of GOLD produced in 1900 and 1901.

1900.		1901.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 2,170	{ Francs ... 7,134,000 £ sterling 285,360	Kilos. 4,021	{ Francs 10,858,000 £ sterling 434,320

French Possessions (See ALGERIA, FRENCH GUIANA, FRENCH SOUDAN, INDO-CHINA, IVORY COAST, MADAGASCAR, NEW CALEDONIA, SENEGAL, and TUNIS).

French Soudan.

Eighty-four kilograms of fine gold, valued at 289,000 francs, were exported in 1898.†

German East Africa.‡

Coal.—There is a large coal bed in Songwe at the north end of Lake Nyassa ; it is not worked as wood is at present a cheaper fuel for the steamers.

Gems.—Garnets are plentiful and £2,750 worth were exported in 1900–01.

Gold.—Prospecting is going on in Kilimatirde, where gold is known to exist.

Salt.—Brine springs at Mlagarassi, Lake Nyassa, produce good salt.

* *Statistique de l'Industrie Minière en France et en Algérie pour l'année, 1900, and pour l'année, 1901.*

† *Statistique de l'Industrie Minière en France et en Algérie pour l'année, 1898.*

‡ Vice-Consul Dundas, "Report on German East Africa for the year 1901." *Dipl. and Cons. Reports*, No. 2,819, Ann. Ser., [Cd. 786-123], London, 1902.

German Empire.

The importance of the mining industry of the German empire is apparent from the following tables, which show that in 1901 its mines employed 608,067 persons, and produced 153 million tons of coal and brown coal, and 12 million tons of iron ore, besides other minerals. The progress of mining during the last 30 years has been enormous. In 1871 the total value of minerals raised was rather more than £15,000,000 sterling; in 1901 it had risen to £65,000,000 sterling. This rise is largely due to the increased output of coal.

*Amber.**—The shores of the Baltic have been the principal amber-yielding region of the world for many centuries; but Dr. Dahms shows by a map that the Tertiary deposits which carry the fossil resin spread over a large part of Europe, and in fact reach from the Eastern counties of England to the Ural Mountains.

Coal.—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany; the principal workings are in the provinces of Brandenburg and Saxony. The brown coal industry has greatly increased in importance since the manufacture of briquettes began. The output of brown coal has almost doubled in the last 10 years,† and in the Bonn district‡ the increase has been almost tenfold. In 1890 it gave employment to only 1,100 persons, and produced only 636,000 tons; last year 5,100 persons were employed, and the output had risen to 6,240,000 tons.

There are three principal coal-mining districts in Prussia: (1) The Lower Rhine and Westphalian Basin, which is by far the most important; (2) Silesia, and especially Upper Silesia; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age; near Hanover there are extensive workings in the Wealden beds.

Copper.—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

Iron Ore.—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. These sources of supply are, however, of far less importance than the stratified ore of Jurassic age in Luxemburg and Lorraine. Indeed, the iron-field upon the confines of France and Germany is at the present moment the greatest ore-producer of Europe. It is estimated that Luxemburg possesses 14 sq. m. (37 sq. km.), Germany 160 sq. m. (414 sq. km.), and France 208 sq. m. (540 sq. km.) of iron territory, in which ore can be raised at a profit. The so-called "iron-ore formation" consists of five main beds of oolitic iron ore interstratified with marl and limestone, with an average thickness of 105 ft. (32 m.), of which rather more than one-half is available iron ore. The ore contains on an average 36 per cent. of iron and 1·7 per cent of phosphoric acid.§

Lead Ore.—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Prussia.

Salts.—In no country in the world is there such an abundance of potassium salts as in Germany. They are mined in the province of Prussian Saxony and the Duchy of Anhalt; of late years Hanover has had a share in the production of these important and not very widely spread minerals, and a mine in Brunswick added to the yield in 1897. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

Zinc Ore.—Upper Silesia is the mainstay of the German zinc industry.

* Dahms "Vorkommen und Verwendung des Bernsteins." *Zeitschr. f. p. Geologie*, Vol. IX., 1901, p. 201.

† "Die Braunkohlen im Deutschen Reich, deutscher Kohlenverbrauch und ausserdeutsche Kohलगewinnung während der Jahre, 1891–1900" *Vierteljahrshefte zur Statistik des Deutschen Reichs*, Jahrgang, 1901, II.

‡ Table exhibited at the Düsseldorf Exhibition, 1902, by the "Verein für die Interessen der Rheinischen Braunkohlen-Industrie" of Cologne.

§ Hoffmann, "Das Vorkommen der oolithischen Eisenerze (Minette) in Luxemburg und Lothringen." *Glückauf*, Vol. XXXV., 1899, p. 640.

TABLE 427.

PERSONS EMPLOYED at the MINES of the GERMAN EMPIRE.

Mineral.	1900.*				1901.†			
	Under-ground.	Above-ground.		Total Under and Above Ground.	Under-ground.	Above-ground.		Total Under and Above Ground.
		Males.	Females.			Males.	Females.	
I.—Coals and Asphalt.								
Asphalt	124	160	10	294	142	191	—	333
Brown coal	23,160	26,508	1,248	50,911	25,651	31,577	1,909	58,537
Coal... ..	316,883	91,796	5,014	413,693	342,816	92,969	5,215	448,000
Graphite	300	276	—	576	193	93	—	286
Petroleum	—	602	—	602	—	610	—	610
Total	340,467	119,337	6,272	466,076	368,802	132,440	6,524	507,766
II.—Salts.								
Bornite	6,813	5,010	5	11,828	8,068	5,117	12	12,193
Kainite								
Magnesium salts								
Potassium salts other than kainite								
Rock salt	699	521	13	1,233	718	582	14	1,304
Total	7,512	5,531	18	13,061	8,781	5,649	26	14,456
III.—Ores.								
Arsenic ore	215	193	—	408	241	205	—	446
Cobalt, nickel, and bismuth ores ...	460	174	8	642	581	241	22	844
Copper ore	12,253	3,325	9	15,587	12,462	3,386	4	15,852
Iron ore	25,739	10,486	1,371	37,596	24,828	9,939	1,321	36,068
Iron pyrites	374	212	—	586	414	229	—	643
Lead ore	8,980	5,577	408	14,965	8,074	5,328	299	13,701
Manganese ore	408	128	4	540	455	154	7	616
Quicksilver ore	3	—	—	3	2	—	—	2
Silver and gold ores	2,163	762	—	2,925	2,117	770	—	2,887
Tin ore	18	36	—	54	19	49	—	68
Uranium and tungsten ores	42	20	—	62	36	19	—	55
Zinc ore	7,630	4,086	2,648	14,364	7,556	4,347	2,733	14,636
Vitriol and alum ores other than iron pyrites.	—	2	—	2	3	4	—	7
Total	58,285	25,001	4,448	87,734	56,788	24,671	4,386	85,845
Total for the German Empire	406,264	149,869	10,738	566,871	434,371	162,760	10,936	608,067
Grand Duchy of Luxemburg—iron ore	3,852	2,855	—	6,307	3,039	1,675	—	4,714

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1901, Berlin, IV. Heft.

† " " " " " " 1902 "

GERMAN EMPIRE—continued.

TABLE 428.

PERSONS EMPLOYED at WELLS producing BRINE or other MINERAL SOLUTIONS during the Years 1900 and 1901.*

Mineral Solution.	1900.			1901.		
	Men.	Women.	Total.	Men.	Women.	Total.
Sodium chloride	3,466	16	3,482	3,616	24	3,640
Potassium chloride	4,013	27	4,040	4,324	29	4,353
Sulphates or chlorides of sodium, potassium, magnesium, or aluminium.	668	13	681	643	14	657
Total	8,147	56	8,203	8,583	67	8,650

For persons employed at quarries, see page 394.

TABLE 429.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
I.—COALS, ASPHALT, &c.				
	Metric Tons. (Not stated.)	1,000 Marks.	Metric Tons. (Not stated.)	1,000 Marks.
Amber	—	—	—	—
Asphalt	89,685	640	90,193	675
Brown coal	40,498,019	98,497	44,479,970	110,280
Coal	109,290,237	966,065	108,539,444	1,015,254
Graphite	9,248	546	4,435	232
Petroleum	50,375	3,726	44,095	2,950
Total value	—	1,069,474	—	1,129,391
II.—SALTS.				
Boracite	232	44	184	32
Kainite	1,227,873	17,309	1,498,569	21,666
Magnesium salts	1,750	15	2,230	16
Potassium salts, other than kainite	1,822,758	21,802	2,036,325	21,763
Rock salt	926,563	4,242	985,050	4,529
Total value	—	43,412	—	48,006
III.—ORES.				
Arsenic ore	4,379	317	4,035	311
Cobalt, nickel, and bismuth ores	4,495	671	10,479	742
Copper ore	747,749	23,816	777,339	24,299
Iron ore	12,793,065	63,801	12,115,003	62,583
Iron pyrites	169,447	1,215	157,433	1,142
Lead ore	148,257	18,072	153,341	14,141

* *Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1902, Berlin, IV. Heft.*

GERMAN EMPIRE—continued.

TABLE 429—continued.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1900 and 1901—continued.

Mineral.	1900.		1901.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES—cont.				
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Manganese ore	59,204	734	56,691	703
Quicksilver	—	—	3	300
Silver and gold ores	12,593	2,059	11,577	1,551
Pin ore	80	45	82	50
Uranium and tungsten ores	43	46	43	30
Vitriol and alum ores, other than iron pyrites.	350	2	1,056	6
Zinc ore	639,215	25,753	647,496	21,502
Total value	—	136,531	—	127,360
Total value for the German Empire in marks.	—	1,249,417	—	1,304,757
Total value for the German Empire in £ sterling.	—	£62,470,850	—	£65,237,850
Grand Duchy of Luxemburg—iron ore	6,171,229	13,827	4,455,179	9,416

TABLE 430.

QUANTITY and VALUE of MINERALS produced from BRINE, &c. WELLS during the Years 1900 and 1901*.

Mineral Solution.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
1. Alkaline sulphates :—				
(a.) Potassium sulphate... ..	30,853	4,997	37,394	5,840
(b.) Potassium and magnesium sulphate.	15,368	1,122	15,612	1,146
(c.) Sodium sulphate	90,468	2,655	76,065	1,968
2. Earthy sulphates :—				
(a.) Aluminium sulphate	44,372	2,700	46,807	2,947
(b.) Alum... ..	4,355	375	4,145	392
3. Magnesium chloride	19,397	305	21,018	334
4. Magnesium sulphate	48,591	612	46,713	687
5. Potassium chloride	271,512	35,175	294,665	35,129
6. Salt (sodium chloride)	587,464	14,268	578,750	15,730
Total value in marks	—	62,209	—	64,173
" " £ sterling	—	£3,110,450	—	£3,208,650

* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1902, Berlin, IV. Heft.

GERMAN EMPIRE—continued.

The following tables give the output and value of some of the more important minerals, classified according to the States in which they were produced.

TABLE 431.

Brown Coal.

State.	1900.*		1901.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Anhalt	1,347,458	3,875	1,365,950	4,167
Bavaria	39,165	144	25,224	97
Brunswick	1,360,048	4,319	1,436,314	4,609
Hesse	255,702	755	307,952	886
Prussia	34,007,542	80,258	37,491,412	90,426
Saxe Altenburg	1,865,517	4,586	2,146,976	5,486
Saxony	1,540,513	4,308	1,635,060	4,408
Other German States	82,074	252	71,082	201
Total value in marks	} 40,498,019 {	98,497	} 44,479,970 {	110,280
„ „ £ sterling		£4,924,850		£5,514,000

TABLE 432.

Coal.

State.	1900.*		1901.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine	1,136,626	12,112	1,193,169	14,216
Bavaria	1,185,296	13,398	1,203,792	14,022
Prussia	101,966,158	878,251	101,203,807	924,556
Saxony	4,802,700	60,304	4,759,812	60,601
Other German States	199,457	2,000	178,864	1,859
Total value in marks	{ 109,290,237 }	966,065	{ 108,539,444 }	1,015,254
„ „ £ sterling		£48,303,250		£50,762,700

TABLE 433.

Rock Salt.

State.	1900.*		1901.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Anhalt	271,889	1,111	291,174	1,204
Prussia	354,603	1,671	353,557	1,674
Württemberg	258,694	1,257	273,556	1,331
Other German States	41,377	203	66,763	320
Total value in marks... ..	926,563	4,242	985,050	4,529
" " £ sterling		£212,100		£226,450

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1901, Berlin, IV. Heft.

†	"	"	"	"	"	"	1902	"
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GERMAN EMPIRE—continued.

TABLE 434.

Iron Ore.

State.	1900.*		1901.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine	7,742,315	22,232	7,594,711	20,310
Bavaria	179,920	826	160,441	750
Brunswick	184,366	411	226,485	434
Hesse	189,697	1,609	163,470	1,707
Prussia	4,268,069	37,686	3,831,670	38,728
Saxe-Meiningen	134,009	543	69,212	282
Waldeck... ..	30,798	154	—	—
Other German States	63,891	340	69,014	372
Total value in marks... ..	{ 12,793,065 }	63,801	{ 12,115,003 }	62,583
" " £ sterling		£3,190,050		£3,129,150
Grand Duchy of Luxemburg	{ 6,171,229 }	13,827	{ 4,455,179 }	9,416
		£691,350		£470,800

TABLE 435.

Silver and Gold Ores.

State.	1900.*		1901.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Total quantity and value in marks for German Empire	{ 12,593 }	2,059	{ 11,577† }	1,551
" " " £ sterling		£102,950		£77,550

According to a return§ of the mining branch of the great industrial insurance institution of the German Empire, which numbers more than half a million members, the deaths from accidents among persons employed in and about mines and smelting works have been as follows :—

TABLE 436.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS in GERMANY.

Year	Deaths which occurred in the same year as the accident.		Total Deaths, including those which took place after the close of the year in which the accident happened.	
	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.
1891	977	2.32	1,030	2.45
1892	830	1.96	875	2.06
1893	920	2.19	964	2.29
1894	786	1.84	826	1.94
1895	912	2.12	954	2.22
1896	971	2.18	1,012	2.27
1897	961	2.05	992	2.12
1898	1,254	2.53	1,280	2.59
1899	1,060	2.03	1,088	2.06
1900	1,145	2.02	1,165	2.06
1901	1,289	2.12	—	—

* *Vierteljahrshefte zur Statistik des Deutschen Reichs*; Jahrgang, 1901, Berlin, IV. Heft.
1902

† 90 kilos. of fine gold and 171,777 kilos. of fine silver were extracted from these ores at the Metallurgical Works in 1901.

§ *Siebzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1901*, Berlin, p. 31.

GERMAN EMPIRE—continued.

TABLE 437.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1901.*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines	62,465	153	1	154	2.47
Coal mines	436,670	972	1	973	2.23
Ore mines and smelting works... ..	78,924	102	—	102	1.29
Salt mines and brine works	21,852	49	—	49	2.24
Other mineral workings... ..	7,456	11	—	11	1.48
Total	607,367	1,287	2	1,289	2.12

TABLE 438.

ACCIDENTS CLASSIFIED so as to show whether they were due to the WORKMEN'S NEGLIGENCE, Year 1901.†

Section.	Accidents.								Total Number of Accidents.
	Owing to Danger Inherent to the Work itself.		By Defects in the Working.		Through Fault of Fellow Workman.		Through Fault of Injured Person.		
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
1. Bonn	994	69.51	4	0.28	41	2.87	391	27.34	1,430
2. Bochum	2,700	77.68	9	0.26	114	3.28	655	18.83	3,478
3. Clausthal	165	72.37	5	2.19	4	1.76	54	23.68	228
4. Halle	308	37.11	29	3.49	37	4.46	456	54.94	830
5. Waldenburg	168	76.36	—	—	13	5.91	39	17.73	220
6. Tarnowitz	601	44.00	16	1.20	60	4.40	689	50.40	1,366
7. Zwickau	169	56.57	4	1.35	18	6.06	107	36.02	297
8. Munich	75	89.28	2	2.38	1	1.19	6	7.15	84
Total	5,179	65.28	69	0.87	288	3.63	2,397	30.22	7,933

The main result of this table is that only 30 per cent. of the accidents were due to the carelessness of the persons injured. Last year the percentage was 27.7.

* *Städtehafter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1901*, Berlin, 1902. pp. 44-47.

† *Ibid.* p. 31.

PERSONS INJURED BY ACCIDENTS IN AND ABOUT QUARRIES* received compensation during the 10 years 1892 to 1901.*

1. Year.	(a) Number, Age, and Sex of Persons Injured.										(b) Cause of Accident.												(c) Consequence of the Injury.						Number of the dependant relatives of persons killed entitled to compensation.																								
	Adults.				Young Persons Under 16.			Total.		Per 1,000 Persons Insured.														Deaths.		Lasting incapacity for Work.		Temporary Incapacity for Work.					Number of the dependant relatives of persons killed entitled to compensation.																				
	M.	F.	M.	F.	Total.	8.	9.	10.	11.	12.	13.																									14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.
1892	252,800	1,155	—	—	5	—	—	1,160	4.6	64	17	4	72	6	306	122	148	66	107	17	7	199	25	176	0.69	23	760	201	115	281	11	407																					
1893	227,500	1,168	—	—	7	—	—	1,175	5.2	62	19	13	57	6	333	135	171	62	112	7	8	169	22	187	0.82	26	735	227	133	325	11	469																					
1894	226,300	1,295	7	17	—	—	—	1,319	5.8	69	32	9	81	6	384	142	163	84	99	15	7	195	33	196	0.86	28	861	234	134	285	12	431																					
1895	229,000	1,333	1	20	—	—	—	1,354	5.9	81	40	9	68	14	369	165	159	90	114	7	6	201	31	171	0.75	18	781	384	121	206	30	357																					
1896	252,200	1,305	2	25	—	—	—	1,332	5.3	77	28	4	65	12	372	171	175	78	123	6	7	182	32	171	0.67	16	760	385	108	278	7	393																					
1897	330,882	1,537	3	13	—	1	—	1,554	4.7	85	29	1	90	15	442	204	173	92	191	10	7	180	35	228	0.68	11	882	433	156	330	15	501																					
1898	369,257	1,587	7	22	—	—	—	1,616	4.4	111	40	6	82	12	406	212	187	98	219	15	13	198	17	249	0.67	16	912	439	160	399	11	570																					
1899	416,095	1,885	2	15	—	—	—	1,902	4.5	123	54	1	111	18	469	264	203	124	234	9	11	262	19	257	0.62	22	969	654	153	351	13	517																					
1900	419,144	1,947	4	22	—	—	—	1,973	4.7	167	71	1	113	18	466	295	169	102	232	13	19	281	26	272	0.65	19	991	691	180	393	13	586																					
1901	384,086	2,144	5	45	—	—	—	2,194	5.7	161	62	4	109	10	549	278	247	107	273	12	26	313	43	284	0.61	21	1,006	933	144	321	21	486																					

* Verwaltungs-Bericht des Vorstandes der Steinbruchs-Berufsgenossenschaft für das XVI. Rechnungsjahr 1901, Berlin, 1902, p. 8.

The figures in Column 2 represent the total number of persons employed in a quarry at any time during the year for however short a period. The number of persons employed full time, reckoning 360 days' work a year for each person, is given as 158,609 in 1900 and 148,615 in 1901.

The number of deaths in column 23 represents the number of cases in which compensation had been paid by the Insurance Board during the year, and differs slightly from the number reported as occurring during the year, which is stated as 261 in 1900 and 229 in 1901.

The death-rates of the full time (360 days) workers were 1.7 for 1900 and 1.5 per 1,000 for 1901.

GERMAN EMPIRE—*continued.*

Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

BAVARIA.*

TABLE 440.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1900 and 1901.

Kind of Mines or Mineral Workings.	1900.		1901.		Kind of Mines or Mineral Workings.	1900.		1901.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Arsenic ore ...	10	31	—	—	Manganese ore ...	1	—	—	—
Barytes ...	195	296	162	418	Ochre, &c. ...	105	146	121	201
Basalt ...	1,199	1,722	1,280	1,829	Paving stones ...	312	3	†	†
Brown coal ...	194	217	159	250	Petroleum... ..	18	—	—	—
Cement marl ...	778	249	469	145	Porcelain earth ...	210	168	79	193
Coal ...	6,757	13,213	7,118	13,694	Salt rock ...	133	173	100	158
Copper ore ...	60	112	36	10	„ from brine ...	227	697	241	691
Emery ...	9	19	8	25	Sand† ...	46	10	64	73
Feldspar ...	15	30	23	46	Sandstone† ...	1,339	2,770	1,359	3,396
Fireclay ...	652	1,571	550	1,592	Slates (roofing and alabs). ...	124	178	64	131
Fluorspar ...	32	121	22	69	Stearite ...	75	214	76	215
Gold and Silver ...	8	18	—	—	Whetstone ...	2	8	15	8
Granite† ...	3,757	1,819	3,508	6,047	Zinc and Lead ...	21	42	17	—
Graphite ...	576	432	286	24					
Gypsum ...	163	8	21	11					
Iron ore ...	772	1,985	842	1,958					
Iron pyrites ...	39	102	40	94					
Limestone ...	724	818	1,569	2,524					
Lithographic stone	—	—	725	1,902	Total ...	18,553	27,172	18,904	35,704

TABLE 441.

QUANTITY and VALUE of MINERALS obtained during the Years 1900 and 1901.

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ...	10,515	60,269	8,711	71,605
Basalt ...	397,062	1,022,242	414,921	659,030
Brown coal ...	34,171	140,501	24,439	94,171
Cement marl ...	180,032	296,218	76,663	255,728
Coal ...	1,078,836	12,609,218	1,087,150	13,213,862
Emery ...	414	17,721	366	13,824
Feldspar ...	460	6,890	788	7,658
Fireclay... ..	187,501	1,854,756	143,028	1,074,202
Fluorspar ...	7,456	42,274	5,220	28,300
Granite ...	209,350	2,299,535	168,573	1,974,831
Graphite ...	9,248	546,480	4,435	231,742

* Return furnished by the Royal Bavarian Mining Department, Munich.

† Figures incomplete.

‡ Included with Lithographic stone.

GERMAN EMPIRE.—BAVARIA—*continued.*TABLE 441—*continued.*QUANTITY and VALUE of MINERALS obtained during the Years 1900 and 1901—*cont.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Gypsum...	35,484	68,797	3,581	23,564
Iron ore...	178,441	799,970	158,820	727,557
„ pyrites	2,120	25,370	2,649	32,721
Limestone	297,635	445,842	356,239	753,945
Lithographic stone	16,030	1,312,400	9,500	931,000
Melaphyre	313,928	941,784	352,715	1,058,145
Ochre, &c.	11,507	100,314	84,929	409,540
Paving stones	16,268	307,592	1,550	30,500
Petroleum	47	4,700	—	—
Porcelain earth	58,795	273,097	35,450	116,561
Salt, rock	1,298	26,249	1,319	24,837
„ from brine	46,293	1,931,187	41,217	1,837,333
Sand	42,671	80,185	37,710	43,154
Sandstone	314,154	1,515,180	355,850	1,299,104
Slates (roofing and slabs)	1,904	85,830	1,024	48,482
Steatite	1,977	128,960	2,291	167,430
Whetstone	25	2,000	10	2,000
Total value in Marks	{ — }		{ — }	
„ „ £ sterling	{ — }		{ — }	

PRUSSIA.

TABLE 442.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1900 and 1901.*

Kind of Mines or other Mineral Workings.	1900.				Total for preceding year
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal	16,697	11,956	20,148	48,801	42,350
Coal	313,196	—	95,179	408,375	377,385
Ore...	44,686	1,806	22,640	69,132	69,863
Other mineral workings	8,493	1,620	8,238	18,351	17,561
Total	383,072	15,382	146,205	544,659	507,164

* *Zeitschr. B. H. & W.*, Vol. L., p. 48.

GERMAN EMPIRE.—PRUSSIA—*continued.*

TABLE 443.

(QUANTITY and VALUE of MINERALS obtained from MINES during the Years 1900 and 1901.

Mineral.	1900.*			1901.†		
	Number of Mines.	Output.		Number of Mines.	Output.	
		Quantity.	Value.		Quantity.	Value.
I.— <i>Coals and Asphalt.</i>						
		Metric Tons.	Marks.		Metric Tons.	Marks.
Asphalt	3	23,891	238,910	3	26,450	264,500
Brown coal	400	34,007,542	80,257,926	395	37,491,412	90,426,331
Coal	283	101,966,158	878,251,112	282	101,203,807	924,556,387
Petroleum	8	27,731	2,435,730	9	24,098	1,844,072
Total	694	136,025,322	961,183,678	689	138,745,767	1,017,091,290
II.— <i>Salts.</i>						
Boracite (pure)	—	217	41,044	—	164	28,791
Kainite	16	857,271	12,147,087	4	1,068,237	16,043,517
Magnesium salts	—	1,511	12,462	—	1,952	14,371
Potassium salts, other than kainite.	9	1,264,993	14,395,301	24	1,431,703	14,390,480
Rock salt	9	354,603	1,670,741	6	353,557	1,674,302
Total	34	2,478,595	28,266,635	34	2,855,613	32,151,461
III.— <i>Ores.</i>						
Arsenic ore	1	3,531	265,613	1	3,050	261,890
Cobalt ore	2	4	640	1	35	8,673
Copper ore	41	736,586	23,373,875	45	765,241	23,901,946
Gold and silver ore	2	1	30,664	1	6	39,759
Iron ore	492	4,268,069	37,686,380	373	3,831,669	38,728,203
Iron pyrites	4	159,186	1,120,932	5	148,457	1,055,151
Lead ore	174	133,483	17,828,139	147	139,285	13,949,598
Manganese ore	21	58,016	661,052	17	55,866	654,179
Nickel ore	3	3,896	77,953	3	9,922	197,510
Quicksilver ore	1	—	—	1	—	—
Vitriol ores and alum ores, other than iron pyrites.	—	103	617	1	611	2,873
Zinc ore	60	636,068	25,591,722	53	644,504	21,369,074
Total	801	5,998,943	106,637,587	648	5,598,646	100,168,856
Gross Total	1,529	144,502,860	1,096,087,900	1,371	147,200,026	1,149,411,607
Total value in £ sterling	—	—	£54,804,395	—	—	£57,470,580

Westphalia and the Rhenish Provinces are the great coal and iron districts, and their importance is evident from some facts set forth in a table, which occupied a prominent place at the Düsseldorf Exhibition.

TABLE 444.

Mineral.	1900.	
	Rhenish Provinces, Westphalia, and Wiesbaden District.	Remainder of the Kingdom of Prussia.
	Proportion of the total output—	
Coal	71 per cent.	29 per cent.
Iron ore	70 "	30 "
Pig iron	81 "	19 "

* *Zeitschr. B. H. S. W.*, Vol. XLIX., p. 20.† *Zeitschr. B. H. S. W.*, Vol. L., p. 20.

GERMAN EMPIRE.—PRUSSIA—*continued.*

TABLE 445.

QUANTITY and VALUE of SALTS obtained from BRINE WELLS, &c. during the Years 1900 and 1901.

Description of the Product.	1900.*					1901.†				
	Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.		Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.	
	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By- product.		Quantity.	Value.	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By- product.		Quantity.	Value.
1. Alkaline Sulphates:—			Metric Tons.	Metric Tons.	Marks.			Metric Tons.	Metric Tons.	Marks.
(a) Potassium sulphate ..	2	9	30,935	22,577	3,683,337	1	9	151,957	26,741	4,238,615
(b) Potassium and mag- nesium sulphate.	—	7	19,800	9,736	745,337	—	7	7,852	9,116	774,856
(c) Sodium sulphate ..	8	7	40,769	49,628	1,241,050	8	9	39,856	58,915	1,481,531
2. Earthy Sulphates:—										
(a) Aluminium sulphate..	5	—	11,469	12,214	792,274	5	—	10,161	11,117	744,554
(b) Alum	2	1	695	1,188	111,761	1	2	896	1,419	139,283
3. Magnesium chloride ..	—	2	19	6,518	115,274	—	3	19	8,589	151,221
4. Magnesium sulphate ..	—	8	3,135	23,553	331,531	—	9	3,671	25,495	406,159
5. Potassium chloride ..	12	3	1,079,237	169,171	21,416,385	14	3	1,163,236	194,964	23,078,695
6. Salt (sodium chloride) ..	35	5	87,140	287,005	7,059,356	34	5	101,156	290,869	7,511,048
Total	64	42	1,273,199	581,500 {	35,496,295 41,774,815 }	63	47	1,478,604	637,225 {	38,496,362 41,234,815 }

TABLE 446.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1901 and preceding Year.‡

Kind of Mines or other Mineral Workings	1901.				Total for preceding year.
	Number of Deaths.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal	57	24	41	122	100
Coal	831	—	125	956	848
Ore	72	2	7	81	78
Other mineral workings	40	2	8	50	27
Total	1,000	28	181	1,209	1,053

* *Zeitschr. B. H. S. W.*, Vol. XLIX., p. 21.† *Zeitschr. B. H. S. W.*, Vol. L., p. 21.‡ *Zeitschr. B. H. S. W.*, Vol. L., p. 51.

GERMAN EMPIRE.—PRUSSIA—*continued.*

TABLE 447.

DEATH-RATES from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1901 and preceding Year.*

Kind of Mines or other Mineral Workings.	1901.				Total for preceding year.
	Death-rate per 1,000 Persons Employed.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal	3.41	2.01	2.04	2.50	2.36
Coal	2.65	—	1.31	2.34	2.25
Ore	1.61	1.11	.31	1.17	1.12
Other mineral workings	4.71	1.24	.97	2.73	1.54
Total	2.61	1.82	1.24	2.22	2.08

TABLE 448.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS, classified according to kind of MINERAL WORKED, and cause of ACCIDENT, during the Year 1901, and the DEATH-RATES for 1900 and 1901.†

Cause of Accident.	Deaths from Accidents					Death-rate per 1,000 Persons Employed.	
	Brown Coal Mines.	Coal Mines.	Ore Mines.	Other Mineral Workings.	Total.	1901.	1900.
Blasting	—	49	13	2	64	.17	.16
Falls of ground ...	24	356	26	25	431	1.12	1.12
On inclines and in intermediate shafts.	3	140	3	1	147	.38	.43
In shafts	14	81	13	10	118	.31	.27
In levels	4	49	3	1	57	.15	.12
Explosion of fire-damp, coal dust, or gases generated by fires.	—	59	—	—	59	.15	.06
Suffocation by natural gases (without explosion), or gases generated by fires (without explosion), or blasting.	5	48	6	1	60	.16	.09
Machinery	—	2	—	—	2	.01	.02
Irruptions of water	2	2	4	—	8	.02	.02
In open workings	24	—	2	2	28	1.82	2.03
On surface	41	125	7	8	181	1.24	1.28
Sundries	5	45	4	—	54	.14	.08
Total	122	956	81	50	1,209	2.22	2.08

* *Zeitschr. B. H. S. W.*, Vol. L., p. 51.† *Ibid.*, pp. 48-51.

GERMAN EMPIRE.—PRUSSIA—*continued.*

The six worst accidents* of the year were as follows :—

TABLE 449.

Name of Mine.	No. of Persons Killed.	Cause.
Cons. Fürstensteiner Collieries ...	20	Suffocation by gases from an underground fire without any explosion.
Consolidation Colliery ...	18	Explosion of fire-damp.
Ludwig II. ...	17	Fall of rock salt.
König Ludwig Colliery ...	10	Explosion of fire-damp and coal dust.
Nordstern Colliery ...	8	Explosion of fire-damp.
Monopol Colliery ...	8	Explosion of fire-damp.

In addition to the accidents by explosions of fire-damp, there are occasional casualties due to suffocation by this gas; six persons were killed in this manner in 1901.

TABLE 450.

EXPLOSIONS OF FIRE-DAMP OR COAL DUST classified according to CAUSE.†

Cause.		1900.			1901.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.
I. Lighting	1. Naked lights ...	1	10	11	1	4	5
	2. Matches or smoking	—	2	2	—	1	1
	3. Illegally opened ...	2	1	3	3	1	4
	4. In defective condition or injured during work.	4	9	13	1	3	4
	5. Gauze becoming red hot.	—	1	1	—	—	—
	6. Oil or soot on gauze taking fire	—	—	—	—	—	—
	7. Passage of flame when relighting by amorces.	—	—	—	2	1	3
	8. Flame driven through gauze by ventilating current:						
	(a) In consequence of careless handling of lamp.	3	10	13	2	5	7
	(b) In consequence of the ventilating current being too rapid.	—	—	—	—	—	—
	(c) Miscellaneous ...	—	2	2	—	—	—
	9. ...	3	10	13	5	9	14
	10. Ventilating furnaces	—	—	—	—	—	—
II. Shot firing ...	11. Accidental or spontaneous ignition of mineral, timber, or other material.	—	—	—	—	—	—
III. Underground fires.	12. Sparks from tools ...	—	—	—	—	—	—
IV. Miscellaneous	13. Sundries or unknown	—	1	1	1	1	2
Total ...		13‡	46	59	15§	25	40

* *Zeitschr. B. H. S. W.*, Vol. L., p. 47.† *Zeitschr. B. H. S. W.*, Vol. L., p. 65.‡ Causing 19 deaths, *Ibid.*, Vol. XLIX., p. 65.§ " 59 " *Ibid.*, Vol. L., p. 62.

GERMAN EMPIRE.—PRUSSIA—*continued.*

The Prussian Commission upon Accidents from Falls of Stone and of Coal has issued four parts of its Report.*

Part I. deals mainly with statistics of falls of ground at collieries in the five different mining districts of Prussia, viz., Upper Silesia, Lower Silesia, Westphalia, Aix-la-Chapelle, and Saarbrücken.

Parts II. and III. contain separate reports from each of the five districts mentioned above, and are full of interesting details concerning the methods of working. Save in the case of the Aix-la-Chapelle district, suggestions are made for reducing the number of accidents by falls.

Part IV. is devoted to a description of the visits of some members of the Commission to collieries in England and France, and the following valuable comparison is made between the death rates from falls of coal and stone in different mining districts in Prussia and in different countries.

TABLE 451.

DEATH-RATES FROM FALLS OF STONE OR COAL.

Mining District of Prussia.	Average Annual Death-rate from Falls per 1000 Persons employed below ground at Collieries during the 5 Years 1892-1896.	Countries.	Average Annual Death-rate from Falls per 1000 Persons employed below ground at Collieries during the 5 Years 1892-1896.
Upper Silesia	1.57	Prussia	1.17
Lower Silesia	0.85	Saxony	0.61
Dortmund	1.04	Belgium	0.71
Aix-la-Chapelle	1.24	Great Britain ..	0.78
Saarbrücken	1.47	France	0.58

As ankylostomiasis or miner's anæmia is no longer unknown in this country, it may be well to point out that experience in Westphalia† shows that watering the roadways to keep down the coal-dust has conduced to the spread of the disease. The following table prepared by the General Miners' Provident Society in Bochum gives the actual figures.

TABLE 452.

NUMBER OF CASES OF ANKYLOSTOMIASIS OR WORM DISEASE.

No.	Name of the Colliery.	In the Years, 1893-1895.	1896.	1897.	1898.	1899.	Watering introduced 1900.	1901.	1902.
1	Erin	3	15	12	25	14	68	286	297
2	Graf Schwerin	17	9	12	11	9	33	378	296
3	Lothringen	—	2	2	7	5	38	50	80
4	Shamrock I/II	—	—	4	4	17	1	129	258
5	Steingatt	—	2	6	—	6	7	12	41
6	Victor	3	5	1	1	1	1	10	44
7	Total for all the Mines attacked ... }	—	107	113	99	94	275	1,030	1,355

It is, therefore, considered desirable to forbid the use of water from the sump for the purpose and to bring down a special supply from the surface.

* *Die Verhandlungen und Untersuchungen der Preussischen Stein-und Kohlenfall-Commission.* Berlin, 1901 & 1902.

† "Ueber die Massnahmen zur Bekämpfung der Wurmkrankheit auf den Zechen des Ruhrbezirks" *Glückauf* Vol. XXXVIII, 1902, p. 1249.

GERMAN EMPIRE—continued.

SAXONY.

TABLE 453.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

Kind of Mine.	1900.			1901.		
	Males.	Females.	Total.	Males.	Females.	Total.
Brown coal	2,336	139	2,975	2,298	149	3,445
Coal	23,913	397	24,310	26,060	395	26,455
Ore	3,861	—	3,861	3,797	—	3,797
Total	30,610	536	31,146	33,153	544	33,697

According to the Saxon Year-book, 80,550 persons were dependent upon the 33,697 workers in and about mines in 1901.

TABLE 454.

QUANTITY and VALUE of MINERALS obtained during the Years 1900 and 1901.

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes	517	6,901	410	5,454
Bismuth, cobalt, and nickel ores ...	595	592,769	522	536,207
Brown coal	1,540,512	4,308,140	1,635,060	4,408,178
Coal	4,802,700	60,304,069	4,683,849	60,961,769
Fluor spar	1,462	10,965	1,615	12,113
Iron ore	5,840	48,376	4,198	37,960
Limestone, &c.	—	34,153	—	26,963
Ochre and umber	276	4,486	61	2,081
Pyrites (arsenical, iron, and copper)...	8,592	108,106	7,119	99,050
Quartz, mica, and uranium ore ...	53	4,654	281	18,301
Silver ore	12,592	2,027,990	11,565	1,503,183
Tin ore	79	68,309	82	60,671
Wolfram	42	43,979	42	28,965
Zinc ore	59	705	29	548
Specimens	—	1,372	—	1,469
Total value in marks ...	—	67,564,974	—	67,702,912
„ „ „ £ sterling ...	—	£3,378,249	—	£3,385,145

GERMAN EMPIRE.—SAXONY—*continued.*

TABLE 455.

DEATHS and DEATH-RATES from ACCIDENTS at MINES during the Years 1900 and 1901.

Kind of Mines.	Deaths from Accidents.		Death-rate* per 1,000 Persons Employed.	
	1900.	1901.	1900.	1901.
Brown coal	8	8	2.73	2.35
Coal	34	37	1.41	1.41
Ore	4	3	1.05	.80
Total and average	46	48	1.49	1.44

The appointment at the Saxon fiscal collieries and ore mines of the so-called "Safety men," who are temporary inspectors chosen from among the working miners, has proved useful.†

German South-West Africa.‡

No minerals are being extracted at the present time. Copper ore is known to exist in parts of the colony.

Greece.

Greece is well supplied with numerous metallic ores, marble and other valuable minerals, and the mineral resources of the country are described at some length in a recent Consular report,§ based upon descriptions given by Cordella.

Emery.—Naxos has long been famous for its emery; the trade in emery is a Government monopoly.

Iron and Manganese.—The ores of these two metals occur and are worked in the Laurium district, and in Grammatikon, Siphnos, Seriphos and Milos.

Magnesite.—Rich deposits of this mineral are a source of wealth to the Island of Eubœa.

Marble.—The marble industry of Greece is of considerable importance, and many of the quarries known to the ancients are being re-worked by English companies, viz., at Larissa and Pentelicon on the mainland, and in the islands of Skyros, Eubœa, and Tinos.

* In calculating the death-rate the persons employed in commercial work above ground, numbering 357 in 1901, are excluded.

† *Jahrbuch für das Berg- und Hüttenwesen im Königreich Sachsen*, Jahrgang 1902, p. B183.

‡ Buchanan, "Report on the German Colonies for the Year ending 30th June, 1901." *Dipl. and Cons. Reports*, No. 2,790, Ann. Ser. [Cd. 786-94], London, 1902, p. 14.

§ Bennett "Report on the Mineral Resources of Greece." *Dipl. and Cons. Reports*. No. 576 Misc. Ser. [Cd. 787-12], London, 1902, with two maps.

GREECE—continued.

Salt.—This is obtained from sea water at Anavyssos, near Laurium, and in the island of Leucados. The industry is a Government monopoly.

Sulphur.—Among other mineral products Milos supplies sulphur.

Zinc.—Calamine and blende occur with lead ore in the Laurium district.

TABLE 456.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.*

	Year.		Total Under and Above Ground.
	1899	1900	
	9,346
	9,500

TABLE 457.

QUANTITY and VALUE of MINERALS produced during the Years 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chromite	4,386	175,440	5,600	224,000
Emery	8,200	869,800	6,328	670,768
Gypsum	110	9,900	82	7,380
Iron ore	628,512	6,285,120	523,804	5,238,040
Lead (argentiferous pig lead) ...	11,555	5,488,625	8,546	4,059,350
„ ore	1,300	52,000	4,018	160,720
Lignite	11,363	204,534	13,191	171,483
Magnesite	20,786	415,720	17,277	345,540
Manganese ore	17,000	510,000	8,050	241,500
Millstones Pieces	15,300	37,500	13,368	33,420
Salt from sea water	20,000	2,000,000	21,045	2,104,500
Sulphur	1,237	111,330	845	76,050
Zinc ore	22,595	1,920,575	19,816	1,684,360
Total value in francs	—	18,079,944	—	15,017,111
„ „ £ sterling	—	£723,198	—	£600,684

TABLE 458.

DEATHS from ACCIDENTS at MINES during the Years 1899 and 1900.*

	Year.		Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	1899	1900		
	3	·32
	9	·95

* Official Return furnished by the Bureau of Mines, Athens. Figures for 1901 not yet available.

Greenland. (See DENMARK.)

Guatemala.*

The following minerals are found in different parts of the Republic, viz., the ores of antimony, copper, gold, iron, lead, manganese, silver and zinc, besides coal, lignite, graphite, gypsum, marble, mica, salt, sulphur, talc, and turquoises.

Though mines were a source of great revenue to Church and State between 1627 and 1820, when Guatemala was a colony of Spain, the mineral industries at the present day are unimportant.

Hayti.†

Coal has been found in various districts, and a little gold washing done in the North of the Island. Copper and Iron were worked for a few months near Gonaïves, apparently with satisfactory results.

Herzegovina. (See AUSTRIA-HUNGARY.)

Holland.‡

Holland possesses immense peat bogs,§ which produce about 100 million hectolitres of good fuel annually. Since 1893 the turbaries have been further utilized for making peat litter. There are now nine factories producing it; they employ 2,500 persons, and their total output is more than 220,000 tons of peat litter a year.

There are coal mines at Heerlen and Kerkrade||; and underground stone quarries are worked at Maastricht and Valkenberg.

TABLE 459.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

Year.	Under-ground			Above-ground.			Total Under-ground and Above-ground
	Males.	Females.	Total.	Males.	Females.	Total.	
1900 ...	902	—	902	403	1	404	1,306
1901 ...	965	—	965	399	—	399	1,364

* Consul Trayner, "Trade, Agriculture and Finance of Guatemala for the Year 1899." *Dipl. and Cons. Reports*, No. 2,488, Ann. Ser., 1900 [Cd. 1-125] pp. 27-32.

† Acting Consul-General Wardrop, "Trade of the Republic of Hayti for the Year 1901." *Dipl. and Cons. Reports*, No. 2,927, Ann. Ser. 1902 [Cd. 1,386-4], p. 11.

‡ Official Returns furnished by the Government of the Netherlands.

§ Rommenhüller, *Mouvement du Commerce et de l'industrie des Pays-Bas durant l'exercice 1898*. Rotterdam, 1899, p. 122.

|| Büttgenbach, "Die Geologie des alten Herzogthums Limburg." *B.N.N. Zeitung*, Vol. LVII, 1898, p. 363.

HOLLAND—continued.

TABLE 460.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years 1900 and 1901.

Year.	Under-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1900	50	—	50	50	—	50	100
1901	50	—	50	50	—	50	100

TABLE 461.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.

Mineral.		1900.		1901.	
		Quantity.	Value.	Quantity.	Value.
Building stone	Cubic Metres	3,000	6,000	6,000	12,000
Coal	Metric Tons	320,225	1,983,010	312,717	1,862,476
Total value in Florins		—	1,994,010	—	1,874,476
"	£ sterling	—	£166,167	—	£156,206

TABLE 462.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.

Year.	Under-ground.			Above-ground.			Total Number of Deaths Under and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Under and Above Ground.
1900	2	—	2	—	—	—	2	2.22	1.53
1901	2	—	2	—	—	—	2	2.07	1.47

There were no fatal accidents at the underground stone quarries in 1900 and 1901.

Honduras.*

Although there is a marked improvement in the value of the output in 1901 compared with that of 1900, it appears from the Consular report that foreign labour and capital are needed, and that some inducements should be held out to colonists by the Government in order to make the mining industry advantageous to the Republic. The exports of minerals during the two years ending 30th June, 1900 and 1901, respectively, were as follows :—

TABLE 463.

Mineral.	1900.	1901.
	Value.	Value.
Copper	£ 296	£ 111
Gold	4,001	10,987
Ore	3,247	5,504
Salt	—	1,248
Silver { Bar	63,135	114,965
{ Coined	28,434	25,714

Indo-China.

ANNAM.

Annam and Tong-King possess large deposits of coal, iron ore, and argentiferous lead ore; besides having also asbestos, graphite, kaolin, and marble, and the ores of antimony, copper, gold, manganese, nickel, quicksilver, and tin.†

The "Société des houillères de Tourane" obtained 2,300 tons of coal in 1898 from its collieries, which are situated at Nong-son.‡ There is no published information about the output for 1899.

Iron ore§ is being smelted on a very small scale by the natives at Nho-Lam in the province of Quang-nam.

COCHIN CHINA.||

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895; but the mines do not appear to have been worked since, as no quantity is reported in the French statistics. In 1901, 2,502 tons of salt valued at £4,050 were produced.¶

TONG-KING.** (See also ANNAM.)

The "Société Française des Charbonnages du Tonkin" obtained in 1901 from its mines at Hongay 248,622 tons of coal against 194,441 tons in 1900; the quantity exported was 188,924 tons.

* Consul Campbell, "Trade of Honduras for the years 1899-1900 and 1900-1901." *Dipl. and Cons. Reports*, No. 2756, Ann. Ser., 1902 [Cd. 786-60], pp. 5 and 7.

† *B.u.h. Zeitung*, Vol. LVIII, 1899, p. 292

‡ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1899*, p. 86.

§ Consul Tremlett, "Trade of Saigon and District for the Year 1897." *Dipl. and Cons. Reports*, No. 2,060, Ann. Ser., 1898 [C. 8648-82].

|| *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1896*, p. 76.

¶ Consul Tremlett, "Trade of French Indo-China for the year 1901." *Dipl. and Cons. Reports*, No. 2834, Ann. Ser., 1902. [Cd. 786-138], p. 6.

** *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1901*.

INDO-CHINA.—TONG-KING—continued.

Copper of good quality is produced from the mines in the provinces of Sontay, Langson, and Laokay.

Iron mines are numerous and productive in the provinces of Hanoy and Sontay.

Italy.

An excellent summary* of the mineral industries of Italy is appended to the catalogue of the exhibits made by the Government at the Paris Exhibition of 1900. In a few words, the nature of the principal kinds of mines and quarries may be stated as follows :—

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc and lead ore; these are far more largely worked in Sardinia than in the peninsula itself. Again, in the case of iron ore, it is an island, Elba, which is the mainstay of the industry. England absorbed nearly half of the Elban output in 1901, and the remainder went to France, Italy, and Holland.† The marble quarries of the Apuan Alps have long been a source of wealth to the country.

The following are a few particulars concerning some of the minerals :—

Alunite.—Quarrying natural alum-stone is a very old industry in the Tolfa hills north-east of Civita Vecchia. The open workings have now given place to underground mining, but the total output at the present day amounts to only a few thousand tons annually.

Asphalt.—A large quantity of bituminous limestone is quarried at Ragusa Superiore in the province of Syracuse. The principal seam is from 13 feet to 20 feet (4 to 6 m.) in thickness, and contains from 16 to 50 per cent. of bitumen. A similar bituminous rock is worked in the Abruzzo.

Boric Acid.—The amount of boric acid produced from the natural steam-puffs (*soffioni*) in the provinces of Pisa and Grosseto varies from two to three thousand tons yearly.

Coal.—Italy greatly lacks supplies of fossil fuel. Its total output in 1901 was only 425,614 tons, of which more than one-half was lignite from Tuscany. There is a little anthracite in Tuscany, in the Val d'Aosta and in Umbria.

Copper.—The principal mines are in Tuscany; next in importance are those of Liguria and Piedmont.

Gold.—The gold veins in the flanks of Monte Rosa were worked by the Romans, and still continue to supply small quantities of the precious metal.

Granite.—Piedmont boasts of excellent red granite and white granite, and the quarries at Baveno and Mont'Orfano on the Lago Maggiore are worked upon an extensive scale.

Iron.—The thick deposits of iron ore in the Island of Elba have been worked for many centuries, and are not yet exhausted. The ore is obtained in open quarries, is loaded at once into barges, and then transhipped into large steamers, which convey it to England, France, and Holland. But a total output of only 232,299 tons is small compared with that of other iron-producing countries.

* *Catalogo della Mostra fatta dal Corpo Reale delle Miniere all'Esposizione Universale del 1900 a Parigi.* Rome, 1900.

† Vice-Consul Tonietti, "Trade of the Island of Elba for the Years 1900-01." *Dipl. and Cons. Reports*, No. 2,801, Ann. Ser., 1902 [Cd. 786-105], p. 9.

ITALY—continued.

Lead and Zinc.—Sardinia is remarkable for its deposits of the ores of lead and zinc. Malfidano, in the province of Cagliari, is the most important zinc mine in the island. It employs 2,000 workmen, and produces annually on an average 51,500 tons of zinc ore, worth nearly £150,000.

*Marble.**—The well-known Carrara marble is obtained from beds of crystalline limestone of Triassic age, which in places attain the enormous thickness of more than 3,000 feet (1,000 m.). In addition to the finest white statuary marble, the quarries furnish many coloured varieties, each known in commerce by its special name.

The importance of the industry may be gauged by the fact that the quarries and dressing establishments of the Apuan Alps gave work to 10,549 persons in 1901, or about the same number as are employed in all the open slate quarries of North Wales.

Quicksilver.—Cinnabar is obtained at Monte Amiata in Tuscany.

Salt.—The deposits of rock salt worked in Sicily belong to the Upper Miocene period, and lie geologically above the sulphur-bearing rocks. The Sicilian mines produce from 12,000 to 15,000 tons a year, but this output might be very largely increased. Salt is obtained from sea water by solar evaporation, and especially in Sardinia and Sicily. The works at Cagliari and Carloforte produced 170,000 tons in 1901, and those at Trapani about 140,000 tons.†

Sulphur.—The sulphur of Sicily is found in seams and lenticular masses in rocks of Upper Miocene age, and mainly in the provinces of Caltanissetta and Girgenti. At the end of 1901 there were 945 mines at work, employing 35,618 workmen and the output of sulphur-bearing rock was 3,726,916 tons.

The proportion of the total output of sulphur extracted by the old-fashioned kilns (*calcaroni*) goes on diminishing from year to year. Ten years ago 74·5 per cent. of the total output was obtained in this manner, 17 per cent. by kilns with communicating chambers, and 8·5 per cent. by steam apparatuses; last year the corresponding proportions were 38·2, 50·7 and 11·1 per cent.

Volcanic Lava and Ash.—Basaltic lava is quarried on a large scale at the foot of Vesuvius, and so is volcanic ash known as “pozzolana.” Similar products are obtained near Rome. The Lipari Islands exported 6,834 tons of pumice stone in 1901.

TABLE 464.

NUMBER of MINERAL WORKINGS, VALUE of OUTPUT, and NUMBER of PERSONS EMPLOYED in the Years 1900 and 1901.‡

Kind of Workings.	1900.			1901.		
	Number at Work.	Total Value of Output.	Number of Persons Employed.	Number at Work.	Total Value of Output.	Number of Persons Employed.
Mines, &c. ...	1,541	Lire. 85,060,002	67,748	1,619	Lire. 84,694,888	67,665
Quarries ...	5,173	32,831,435	31,535	11,441	37,201,903	56,948
Turbaries ...	50	366,991	797	54	421,001	1,066
Sea salt ...	65	2,369,117	2,648	65	2,685,981	2,799
Total ...	—	Lire 120,627,545 £ sterling 4,825,102§	102,728	—	Lire 125,003,773 £ sterling 5,000,151§	128,478

* Consul Keene “Trade of Consular District of Genoa for the year 1901.” *Dipl. and Cons. Reports*, No. 2,820, Ann. Ser. [Cd. 786-124]. London, 1902, p. 36.

† Consul Ferris “The Trade and Commerce of Sardinia for the year 1901.” *Dipl. and Cons. Reports*, No. 2,838, Ann. Ser. [Cd. 786-142]. London, 1902, p. 6. Consul Churchill “The Trade of Sicily for the year 1901.” *Dipl. and Cons. Reports*, No. 2,887, Ann. Ser., 1902 [Cd. 786-191], p. 46.

‡ *Rivista del Servizio Minerario nel 1900*, pp. xxi., xxv., xxvi., xxxii., xxxvii., 1., nel 1901, pp. xxxiv., xxxix., lix.

§ Value calculated at 25 Lire = 1£ sterling.

ITALY—continued.

TABLE 465.

NUMBER of PERSONS EMPLOYED in and about MINES and other MINERAL WORKINGS (exclusive of Quarries, Turbaries, and Sea Salt Workings) during the Years 1900 and 1901,* classified according to mineral wrought.

Kind of Mines or other Mineral Workings.	1900.		1901.	
	Number of Mines or Workings.	Number of Persons Employed.	Number of Mines or Workings.	Number of Persons Employed.
Alum-stone	1	95	1	99
Antimony ore	21	492	25	368
Arsenic ore	2	4	1	4
Asphalt, &c.	9	1,696	11	1,759
Boric acid	12	380	12	381
Copper ore	55	2,406	47	2,445
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	93	3,822	82	3,897
Gas, carburetted hydrogen	(a)	(a)	(a)	(a)
Gold ore	22	857	27	153
Graphite	24	261	47	301
Iron ore	46	2,219	51	1,783
Iron pyrites (cupreous)	32	812	32	1,049
Lead ore	(b)	(b)	(b)	(b)
Manganese ore	10	166	9	106
Manganese and iron ore	1	270	4	219
Mineral waters	(a)	(a)	(a)	(a)
Nickel and cobalt ore	(c)	(c)	(c)	(c)
Petroleum	16	421	15	418
Quicksilver	12	825	13	829
Rock salt	23	343	22	403
Salt from springs	(a)	(a)	(a)	(a)
Silver ore	7	523	4	464
Sulphur	883	35,290	945	35,618
Zinc ore	262	16,866	271	17,369
Total	1,541	67,748	1,619	67,665

* *Rivista del Servizio Minerario* nel 1900, pp. xxi., xxv., xxvi., xxxii., xxxvii., l., nel 1901, pp. xxii., xxvii., xxviii.

(a) Included with petroleum.

(b) Included with zinc ore.

(c) Included with copper.

ITALY—continued.

TABLE 466.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum-stone	5,200	36,400	4,900	58,800
Antimony ore	7,607	362,342	8,818	342,565
Arsenical pyrites	6	480	6	480
Asphalt, &c.	100,775	1,339,873	104,111	1,308,814
Boric acid	2,491	847,144	2,558	972,040
Copper ore	95,824	3,169,842	108,120	3,420,653
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	480,859	3,663,915	426,377	3,375,560
Gas, carburetted hydrogen (cubic metres).	1,400,338	49,399	1,350,921	51,933
Gold ore... ..	5,840	266,284	890	40,600
Graphite	9,720	278,600	10,313	296,055
Iron ore	247,278	4,585,522	232,299	3,672,728
„ „ manganiferous	26,800	335,000	24,290	301,196
Iron pyrites (cupreous)	71,616	1,480,276	89,376	1,767,487
Lead ore	(a) 39,108	7,351,962	(b) 53,734	9,213,471
Manganese ore	6,014	154,974	2,181	83,170
Mineral waters	27,767	367,202	30,881	411,686
Nickel and cobalt ore	—	—	—	—
Peat	25,125	366,991	28,233	421,001
Petroleum	1,683	491,769	2,246	671,065
Quicksilver	33,930	1,127,380	38,614	1,503,100
Rock salt	18,331	276,387	23,054	350,486
Salt from springs	10,890	366,519	10,690	308,446
Salt, sea	338,034	2,369,117	401,443	2,685,981
Silver ore	584	398,870	511	355,492
Sulphur, rock	3,628,643	41,701,381	3,726,916	43,819,718
Zinc ore	139,679	16,408,481	135,784	12,369,343
Produce from quarries (value)	—	32,831,435	—	37,201,903
Total value in lire	—	120,627,545	—	125,003,773
„ „ £ sterling	—	£4,825,102	—	£5,000,151

TABLE 467.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1900 and 1901.†

Cause.	1900.					1901.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.
Falls of ground	110	60	79	·89	·70	126	72	86	1·06	·85
Suffocation by gases, explosions, and fires.	20	22	22	·32	·26	24	23	24	·34	·27
Falling down shafts, &c., and miscellaneous.	77	33	57	·49	·39	79	25	55	·37	·30
Blasting	12	4	8	·06	·05	17	6	18	·09	·07
Total	219	119	166	1·76	1·40	246	126	183	1·86	1·49

* *Rivista del Servizio Minerario nel 1900*, pp. xxv., xxxvi., and l., and *nel 1901*, pp. xxvii., xxxiv., and lix.

† Ditto, *nel 1900*, pp. cvii. and lxii., and *nel 1901*, p. lxxi.

(a) Including 4,005 tons of lead and zinc ore, of the value of 112,997 lire.

(b) Including 10,315 tons of lead and zinc ore, of the value of 111,600 lire.

ITALY—continued.

TABLE 468.

ACCIDENTS at QUARRIES, arranged according to CAUSES, during the Years 1900 and 1901.*

Cause of Accident.	1900.				1901.			
	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.
Falls of ground ...	22	15	20	·48	21	13	10	·23
Falling down workings, and miscellaneous.	24	7	19	·22	28	9	22	·16
Blasting ...	6	1	5	·03	4	2	4	·03
Total ...	52	23	44	·73	53	24	36	·42

Italian Possessions. (See ERITREA.)

Ivory Coast.

Gold is extracted on a small scale by the natives, both from quartz reefs and from detrital deposits. Fossil gum opal is fairly abundant near Thiassalé and other places.

Japan.

In addition to its well-known deposits of coal and copper ore, Japan is said to possess great wealth in the ores of antimony, gold, lead, manganese, silver, and zinc, besides petroleum and sulphur.

The most important coal mines are upon the Island of Kiushiu; the total output is increasing rapidly, and is about equal to that of India or Australia. More than 3½ million tons of coal were exported in 1900.†

Alluvial deposits of gold are being worked energetically on the island of Hokkaido,‡ and gave an output of 10,000 ozs. in 1901. Gold also occurs in Formosa; the mines are situated in the neighbourhood of Kelung, and their output in 1899 was 4,116 ozs.§

Petroleum|| is obtained from wells in the Echigo district, on the West Coast of Japan. The output for 1899 is estimated at 9 million gallons. Oil-fields likewise exist on the Island of Hokkaido.‡

The Island of Formosa produced 48,560 tons of salt in 1901. The trade is a Government monopoly.¶

Sulphur is now being worked on a large scale on the volcanic island of Etrofú in the extreme north of Japan; 10,000 tons were obtained in 1900.**

* *Rivista del Servizio Minerario nel 1900*, p. lxxv, and *nel 1901*, p. lxxv.

† A. H. Lay, "Trade of Japan for the year 1900." *Dipl. and Cons. Reports*, No. 2,595, Ann. Ser., 1901.

‡ Wileman, "Trade of Hokodate for the year 1901." *Dipl. and Cons. Reports*, No. 2,900, Ann. Ser., 1902 [Cd. 786-204].

§ Acting-Consul Wawn, "Trade of North Formosa for the year 1900" *Dipl. and Cons. Reports*, No. 2,728, Ann. Ser., 1901 [Cd. 786-32], p. 12.

|| Consul Hall, "Trade of Hiogo and Osaka for the year 1899." *Dipl. and Cons. Reports*, No. 2,564, Ann. Ser., 1901 [Cd. 429-22], p. 7.

¶ Consul Kenny, "Trade of South Formosa for the years 1900 and 1901." *Dipl. and Cons. Reports*, No. 2,796, Ann. Ser., 1902, p. 10.

** Crawford, "Sulphur Mining in the North Pacific." *Cassier's Mag.*, Vol. xix., 1901, p. 311.

JAPAN—continued.

TABLE 469.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1899 and 1900.*

Kind of Workings.	Persons Employed in the Year.	
	1899.	1900.
Coal Mines	60,964	70,508
Metal Mines	51,141	54,805
Other Non-metallic Mines ...	7,562	5,698
Placer Mining	6,108	9,835
Total	125,775	140,846

TABLE 470.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1899 and 1900.*

Mineral or Metal.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
Antimony, crude } (metal)...	Metric Tons. 712	£ 13,572	Metric Tons. 81	£ 1,339
„ refined }	229	7,430	349	11,141
Arsenic (metal)	5	64	5	60
Coal	6,716,831	2,261,174	7,429,457	2,517,918
Copper (metal)	24,271	1,338,862	25,304	1,667,724
Gold „	Kilos. 1,673	193,927	Kilos. 2,130	290,079
Graphite	53	1,024	94	2,443
Iron, pig	23,066	93,291	21,299	70,480
„ pyrites	8,376	1,092	16,146	2,649
„ vitriol	864	1,684	932	1,831
Lead (metal)	1,988	25,518	1,877	33,342
Manganese	7,953	5,575	15,228	16,698
Mercury	—	—	Kilos. 270	69
Ochre	—	—	33	230
Petroleum, refined	4,753	17,742	Litres 138,375,939†	198,859
„ crude	52,874	86,742		
Salt	581,111	772,586	659,118	961,637
Silver (metal)	Kilos. 56,168	209,936	Kilos. 58,953	239,323
Sulphur	10,235	42,347	14,435	32,042
Tin (metal)	19	1,746	12	1,210
Total value	—	5,074,312	—	6,049,073

* Abstract of the Statistics of the Imperial Japanese Department of State for Agriculture and Commerce, 1900; No. 1, Tokyo and Osaka, 1902; and Official Return furnished by the Mining Bureau at Tokyo.
† Crude.

JAPAN—continued.

TABLE 471.

ACCIDENTS at MINES during the Years 1899 and 1900.*

Year.	Killed.	Death-rate per 1,000 Persons Employed.†
1899	674	5.63
1900	171	1.31

The high death-rate in 1899 is exceptional. Several hundred people lost their lives through the flooding of a copper mine at Besshi Ithikoku.

Java. (See DUTCH EAST INDIES.)

Johore.‡

Gold has been found in one or two places, and the country is rich in iron ore. Important deposits of tin have been discovered in several places, and a considerable amount of tin mining is now carried on in the Ulu Johore districts, and some at Bukit Mor, Padang.‡

Liberia.§

It is supposed that Liberia contains much mineral wealth, and some prospecting for gold is going on.

Lourenço Marques. (See PORTUGUESE EAST AFRICA.)

Luxemburg.

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

Madagascar.||

The mineral wealth of the island appears to be great. In addition to gold, which is found in alluvial deposits widely spread over the island, the ores of antimony, copper, iron and tin are said to be abundant, to say nothing of asphalt, coal, and petroleum.

According to Consul Porter, rich deposits of alluvial gold have been discovered in the valley of the Ampoasary, a tributary of the Mananjary river, about 40 miles east of the town of Ambositra. The auriferous gravel is being washed in pans by the natives, of whom about 3,000 are at work. The district is unhealthy owing to the prevalence of fever.

The quantity of gold exported from Madagascar in 1900 was 43,400 ozs. (1,350 kilos.), valued at £143,520, and 33,600 ozs. (1,045 kilos.), valued at £112,860, in 1901.¶

* Abstract of the Statistics of the Imperial Japanese Department of State for Agriculture and Commerce, 1900; No. 1, Tokyo and Osaka, 1902; and Official Return furnished by the Mining Bureau at Tokyo.

† Excluding Workers in Placer Mining.

‡ The Singapore and Straits Directory for 1900. Singapore, 1900, p. 301.

§ Cromie, "Trade of Liberia for the year 1901." Dipl. and Cons. Reports, No. 2,875, Ann. Ser., 1902 [Cd. 786-179], p. 8.

|| MS. communication to Foreign Office, 5 July, 1900, and Consul Porter, "Trade of Madagascar for the Year 1899." Dipl. and Cons. Reports, No. 2513, Ann. Ser., 1900 [Cd. 352-9], p. 5.

¶ Return furnished by the French Government.

Mexico.*

Many minerals are obtained in Mexico. The most important are the ores of copper, gold, lead, and silver.

Coal.—Various coalfields have been discovered, and no doubt will gradually become of great value to the Republic. At present the output is small.

Copper.—The most important copper mine in Mexico is at Boleo,† Lower California. It employed 3,700 persons in 1900, and produced 11,297 tons of metal.

Gems.—Opals‡ are mined extensively in the State of Queretaro.

Gold.—The precious metal is found in many of the provinces, but especially in Chihuahua Sonora, Sinaloa, Guerrero, Sonora, Oaxaca, and Lower California.

Iron.—Rich deposits exist,§ but at present smelting operations are conducted on a small scale.

Marble.—The so-called "Mexican onyx" is a handsome marble, obtainable in large blocks, and much prized for decorative purposes.

Silver.—Mexico produces nearly 30 per cent. of the world's output of silver. The principal mining districts are in the States of Guanajuato, Zacatecas, San Luis Potosi, and Hidalgo.

An excellent synopsis of the Mining Laws of Mexico has been drawn up by Mr. Chism.||

TABLE 472.

PERSONS EMPLOYED at MINES during the Years 1898 and 1899.¶

Year.	Men.	Women.	Boys.	Total.
1898	84,121	812	4,139	89,072
1899	99,396	1,288	5,852	106,536

TABLE 473.

VALUE of MINERALS exported during the Years 1900 and 1901.

Mineral.	1900.¶		1901.††	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	\$	Metric Tons.	\$
Antimony ore	2,313	23,319	—	—
Asphalt	627	12,846	—	—
Coal	38,676	157,282	—	—
Copper and Copper ore	28,378	9,495,235	42,722	12,954,340
Gold	Kilos. 12,201	8,240,590	Kilos. 13,458	9,089,800
Graphite... ..	2,561	25,650	—	—
Gypsum	1,600	8,000	—	—
Lead	75,413	4,290,033	79,497	4,479,310
Marble	1,030	108,759	—	—
Precious stones... ..	—	875	—	—
Pumice stone	—	—	—	—
Salt	1,518	4,151	—	—
Silver	Kilos. 1,923,331	78,693,079	Kilos. 1,480,279	60,565,607
Tin	Kilos 96	43	—	—
Zinc ore	1,091	15,769	—	—
Minerals not specified... ..	701	5,347	—	—
Total value in \$	—	101,080,978	—	—††
" " £	—	£10,932,157**	—	—

* Romero, *Geographical and Statistical Notes on Mexico*. New York and London, 1898, pp. 13-27, and Sellerier, *Data referring to Mexican Mining*. Mexico, 1901.

† *Exposition Universelle de 1900. Compagnie du Boleo. Notice sur la période de 1889 à 1900*. Paris, 1900.

‡ Kunz, "Gems and precious stones of Mexico" *Trans. American Inst. Min. Eng.*, 1901.

§ Witherbee, "The Iron Mountain, Durango, Mexico." *Trans. American Inst. Min. Eng.*, 1901.

|| *Trans. American Inst. Min. Eng.*, 1902.

¶ Official Return furnished by the Ministry of Finance, Mexico.

** Calculated at 10 dollars = £1, except for the value of the Gold which is calculated at 5 dollars to £1.

†† Bjorklund, "Trade of Mexico for the year 1901." *Dipl. and Cons. Reports*, No. 2,925, Ann. Ser., 1903 [Cd. 1386-2].

‡‡ Statistics incomplete.

MEXICO—continued.

TABLE 474.

DEATHS from ACCIDENTS at MINES during the Years 1898 and 1899.*

Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
1898 	168	1.89
1899 	109	1.02

According to statements in the press (1901), some dynamite stored in San Andres silver mine, Durango, exploded accidentally and caused the death of 87 persons.

Morocco.†

Copper.—In the beginning of the sixties copper ore was still being worked near Tarudant, the capital of the province of Sus. The ore is likewise found in the Tangier region.

Gold.—Silver and gold are said to occur in the province of Sus.

Iron.—It is probable that the Carthaginians worked the old iron mines, of which remains exist at Djebel Hadid, 14 miles N.E. of Mogador.

Salt.—Morocco is rich in salt. Some is found in the beds of dried-up lakes in summer. Rock salt is obtained in the Atlas Mountains, near Demnat; and at Rabat and elsewhere sea water is evaporated by the heat of the sun.

Netherlands and its Colonies. (See HOLLAND, DUTCH EAST INDIES, AND DUTCH WEST INDIES.)

New Caledonia.‡

Chromic Iron.—New Caledonia produces more chromic iron than any other country except Turkey. The ore exported is good, and gives 50 to 52 per cent. of chromium oxide. The demand is increasing and many new chrome mines have been opened recently.§

Cobalt Ore.—With an output of 2,440 tons of ore, containing 3 to 4 per cent. of metal, New Caledonia ranks very high as a producer of cobalt; indeed it probably takes the highest place.

Nickel Ore.—The French colony, while suffering from the competition with Canada, the greatest nickel country of the world, remains nevertheless a large producer. The ore exported yields from 6 to 8 per cent. of metal.

TABLE 475.

PERSONS EMPLOYED at MINES during the Years 1898.||

Year.	White.	Coloured.	Total.
1898 	3,831	1,259	5,090

* Official Return furnished by the Ministry of Finance, Mexico.

† Fischer, "Die Bodenschätze Maroccos" *Zeitschr. f. prakt. Geologie*, Vol. VIII., 1900, Part 4, p. 110.

‡ Pelatan, "Les richesses minérales des Colonies Françaises," *Revue Universelle*, Vol. L., 1900, p. 117.

§ Acting Consul Reichenbach, "Trade of New Caledonia for the year 1901." *Dipl. and Cons. Reports*, Ann. Ser., No. 891 [Cd. 786-195], 1902, p. 6.

|| *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année, 1898*, p. 85. Later figures are not obtainable.

NEW CALEDONIA—*continued*.

TABLE 476.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity Produced.	Value.	Quantity Exported.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chrome ore	10,500	630,000	17,451	946,000
Cobalt ore	2,440	276,000	3,123	415,000
Copper ore	2	200	1,088	99,000
Nickel ore	100,000	5,800,000	132,814	7,435,000
Total value in francs	{ — { 6,706,200		{ — { 8,895,000	
" " " £ sterling	{ — { £268,248		{ — { £355,800	

Nicaragua.†

The exact output of the mines and alluvial diggings does not appear to be known. The exports are given in the table below.

TABLE 477.

Mineral.	1900.	
Gold (bars and dust) ...	{ Kilos. 575 } { Ozs. 18,500 }	£ 62,000
Gold ore	Lbs. 14,050	80,690

Norway.‡

Norway is far less important as a mining country than Sweden.

Apatite.—This mineral was worked on a large scale some years ago at Oedegaarden, but the output is now comparatively small.

Copper.—Copper ore and iron pyrites are the chief metallic products of Norway. They are produced by various mines, among those of which may be mentioned Röros, Sulitelma and Lyngen.

Felspar.—The supply of felspar is derived mainly from veins of pegmatite in Setersdalen in the province of Smaalenene and along the coast between Bamle and Arendal. Quartz and mica are obtained from the same deposits.

Gems.—Emeralds are being obtained near Minne.

Granite.—Quarries producing granite, syenite, gabbro or porphyry, are worked near Fredrikshald, Frederikstad, Larvik and Drammen.

* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1900, and pour l'année 1901.*

† Consul Chambers, "Trade of Nicaragua for the Year 1900." *Dipl. and Cons. Reports*, No. 2,585, Ann. Ser., 1900 [Cd. 429-43].

‡ Information furnished by the Central Statistical Office, Kristiania, and *La Norvège. Ouvrage Officiel publié à l'occasion de l'Exposition Universelle de Paris, 1900.* Kristiania, 1900, p. 395.

NORWAY—continued.

Infusorial Earth.—Beds of infusorial earth are worked at different places in the South of Norway.

Marble.—Fauske, in Nordland, is the chief marble centre. The quarries are worked on a large scale.

Silver.—The Kongsberg mines have long been famous for their native silver, which is sometimes met with in masses of considerable size; the picked stuff sent to the smelting works contains 70 per cent. of the precious metal. The amount of silver obtained by smelting, and derived entirely from Kongsberg, was 4,578 kilos., valued at 336,000 kroner in 1900.

Soapstone.—This mineral forms one of the exports of Norway.

There appears to be no official information about accidents in mines in Norway, similar to that which is given by the sister country.

TABLE 478.

PERSONS EMPLOYED at MINES during the Years 1899 and 1900.*

Kind of Mines.					1899.	1900.
Apatite...	...	...	...	...	?	?
Chrome ore	...	...	...	...	2	10
Copper ore	...	...	...	...	1,398	1,924
Felspar	...	...	...	...	?	?
Gold	...	...	...	...	82	71
Iron ore	...	...	...	...	148	162
Iron pyrites (in part cupreous)	...	...	...	...	501	494
Nickel ore	...	...	...	...	3	39
Silver and silver ore	...	...	...	...	259	280
Zinc ore	...	...	...	...	64	37
Total					2,457	3,017

TABLE 479.

QUANTITY and VALUE of MINERALS produced from MINES during the Years 1899 and 1900.*

Mineral.	1899.		1900.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Kr.	Metric Tons.	Kr.
Apatite (exported)	1,500	82,500	300	16,000
Chrome ore	41	800	165	3,000
Copper ore	43,358	2,182,400	46,858	2,535,000
Felspar (exported)	19,260	288,400	17,609	115,000
Gold (fine)	Kilos. 4.320	10,000	Kilos. 4.320	9,000
Iron ore	4,576	30,000	17,925	133,000
Iron pyrites (in part cupreous)	95,636	1,708,500	98,945	2,354,000
Nickel ore	—	—	1,888	47,000
Silver (fine)	Kilos. 4,598	330,000	Kilos. 4,578	336,000
Titanium ore (rutile)	30	17,000	40	24,000
Zinc ore	379	11,500	204	6,000
Total value in Kr....	—	4,661,100	—	5,578,000
„ „ £ sterling...	—	£256,104	—	£306,483

* Official Return furnished by the Central Statistical Office, Kristiania.

Paraguay.

Though many useful ores and minerals are said to exist in Paraguay, they still remain unworked.

Persia.*

The minerals of the country belong to the Government, and the mines are leased out to private persons. The Ministry of Mines has no account of the number of persons employed, nor of quantity and value of the minerals produced.

The mineral wealth of Persia is great, though it cannot be properly utilized at the present time owing to want of easy means of communication. Deposits of the following useful minerals are known to exist, viz. :—alum, antimony ore, borax, coal, the ores of cobalt, copper, gold, iron, lead and manganese, petroleum, realgar, salt, saltpetre, silver-lead ore, sulphur, and turquoises.

Coal.—There are fine coal deposits† near Kerman, and much iron ore of good quality on the slopes of the Elburz range and elsewhere.

Copper.—Rich deposits of copper are known.

Lead ore.—Argentiferous lead ore is plentiful, but is worked in a primitive fashion.

Turquoises.—The annual rent paid for the turquoise mines‡ near Nishapur in Khorassan is £4,800, and the value of the gems produced must therefore considerably exceed that sum.

Peru.§

No exact data exist concerning the number of persons employed in mines ; but it is estimated at 100,000, including a few females.

The number of persons employed on the coast at the salt works, quarries, and petroleum wells is estimated at 5,000.

The principal minerals of Peru are borate of lime, coal, copper ore, gold, petroleum, salt, and silver ore.

Borates.—Though borates occur in various places, the only deposit which is being worked at a profit at the present time, is that of Salinas, near the boundary between the provinces of Arequipa and Moquegua.

Coal.—All the different varieties of mineral fuel exist in Peru, viz. :—peat, lignite, coal, and anthracite. Lignite is found in the Tertiary rocks on the coast and elsewhere. The true coal and anthracite are found in the Cretaceous and Jurassic rocks in various places, and a solid hydro-carbon, which is neither coal nor anthracite, occurs in veins, and is likewise worked and sold as mineral fuel.

Copper ore.—Rich veins of copper ore exist in the Cerro de Pasco silver mines. The ore and regulus sent away annually from Cerro de Pasco are estimated to contain more than 5,500 tons of metal.

* Helmhacker, "The Mineral Resources of Persia," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 38, and *B. u. h. Zeitung*, Vol. LVIII., 1899, p. 272.

† *Berg-und hüt. Zeit.*, Vol. LVIII., 1899, p. 272.

‡ Consul General Temple, "Report on the Trade and Commerce of Khorassan for the Year 1897-98" *Dipl. and Coms. Reports*, No. 2202, Ann. Ser., 1899 [C. 9044-28].

§ Garland, *Apuntes sobre la industria minería 1900*. Lima, 1901.

PERU—continued.

Gold.—The provinces which are richest in gold are Sandia, Carabaya, Puncartambo and Pataz.

Petroleum.—The only places where petroleum is being obtained at the present time are on the coast of the province of Piura.

Silver ore.—This is the principal mineral worked in Peru; the largest mines are at Cerro de Pasco. The output of silver has diminished considerably, on account of the drop in price of the metal.

Salt.—The production of salt is a Government monopoly. It is found in abundance in Peru, and occurs in various ways. There are deposits on the coast at Sechura, Huacho, Otuma, Moquegua, &c. In the Andes the salt beds of San Blas are worked on a large scale, and in eastern Peru there is the famous Cerro de la Sal.

Sulphur.—Sulphur is found on all the volcanoes of the Andes in considerable quantities, besides occurring in sedimentary deposits in the department of Piura.

TABLE 480.

MINERALS produced during the YEARS 1900 and 1901.

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Borates	7,080	56,638		
Coal	47,500	65,000		
Copper ore	35,500	619,261		
Gold (Fine)	Kilos. 1,815	223,200		
Graphite	12	161		
Lead (Ore and Metal)	219	8,512		
Petroleum	36,640*	131,903		
Quicksilver	11	1,750		
Salt	15,000	55,000	15,849†	78,476
Silver (Fine)... ..	Kilos. 265,700	929,575		
Sulphur	Kilos. 634	3		
Other Minerals	—	3,960		
Total value	—	2,094,963	—	†

* This quantity is estimated, and it consists partly of refined products.

† *Reseña Industrial del Perú*, Lima, 1902, p. 44.

‡ Other figures not received.

Philippine Islands.*

It has long been known that the mineral resources of these islands are very varied.

Coal.—Coal and lignite are found on many of the islands, and mining operations are likely to be carried on in the islands of Negros, Cebú, and Bataan.

Copper.—Copper ore occurs in the islands of Benguet, Lepanto, and Panay.

Gold.—Large quantities of gold have been extracted from alluvial deposits and quartz veins.

Iron.—Cebú and Caraballo have deposits of iron ore, which are likely to be worked.

Lead.—The ore of this metal is found in Marinduque, Luzon, and Panay.

Petroleum and Natural Gas.—Mineral oil is known in Cebú, Panay, and Leyte, and Cebú has likewise natural gas.

Quicksilver.—According to the reports of prospectors, there are deposits of quicksilver on Leyte and Panay.

Porto Rico.†

The island of Porto Rico possesses mineral resources which are not likely to remain undeveloped by its new owners.

Coal.—Coal has been found in the western part of the island and at Guatemala.

Copper.—The ores of copper are found in several places.

Gold.—From six to eight thousand dollars worth of gold a year is panned out from the beds of creeks and rivers.

Gypsum.—This mineral is common.

Iron Ore.—There are valuable deposits of iron ore, especially north of Juncos.

Lignite and Peat.—These two minerals occur in many places.

Phosphate of Lime.—Phosphate rock is everywhere abundant. It has been worked on the islet of Mona, in the San Domingo Channel, and about 9,000 tons were exported to Europe in 1894.

Salt.—Rich deposits of salt are known in several places.

Portugal.‡

The mineral products of Portugal, as shown by Table 483, are numerous, but the quantities raised at the present time are not sufficient to entitle it to be called a great mining country. The official statistics omit all mention of the marble, slate, and other stone quarried in the country.

* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242. Rice, "Mining in the Philippines," *Eng. Min. Jour.*, Vol. LXX., 1900, p. 400.

† Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.—"Zur Geologie der Insel Mona in West-Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII., 1892, p. 337.—Domesch "Porto Rico; her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529.

‡ Official Return furnished by the Portuguese Government.

PORTUGAL—continued.

Antimony Ore.—The principal antimony mines are in the commune of Gondomar, in the Porto district; the ore likewise occurs in the Braganza district.

Copper.—The deposit of copper-bearing pyrites at San. Domingos, in Southern Portugal, furnishes most of the mineral wealth of the country at the present time. There are sundry other mines producing cupreous iron pyrites.

*Iron Ore.**—Rich deposits of iron ore exist, which it is expected will some day become a source of considerable wealth.

Marble.—Though the country cannot boast of treasures of white statuary marble like that of Carrara, it possesses many beautiful varieties of the stone.

Slate.—There are slate quarries at Valongo which are worked by an English company. They produce large slabs for billiard tables, tanks, and cisterns.

Tin Ore and Wolfram.—These minerals occur in the Villa Real and Braganza districts.

TABLE 481.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

Kind of Mines	Under-ground.			Above-ground.			Total Under and Above Ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
Coal	334	—	334	328	113	441	775
Iron ore	133	—	133	271	59	330	463
Other mines ...	1,784	—	1,784	1,614	157	1,771	3,555
Total for 1901	2,251	—	2,251	2,213	329	2,542	4,793
Total for previous year	3,317	—	3,317	2,188	255	2,443	5,760

TABLE 482.

PERSONS EMPLOYED at QUARRIES during the Year 1890.†

Under-ground.			Above-ground.			Total Under and Above Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
419	—	419	4,240	57	4,297	4,716

* Consul Cowper, "Trade of Southern Portugal for the year 1900." *Dipl. and Cons. Reports*, No. 2635, Ann. Ser. 1901. [Cd. 429-93], pp. 4 and 5.

† No later return available.

PORTUGAL—continued.

TABLE 483.

QUANTITY of MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.*		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Mil reis.
Antimony ore	38	393	—	—
Arsenic	1,031	44,293	527	32,664
Coal (Anthracite)	24,066	64,310	16,000	51,742
Copper precipitate	2,948	363,588	2,061	314,877
Cupreous pyrites	—	—	215	3,868
Cupreous iron pyrites	57,540	130,034	443,182	807,515
Gold (fine)	Kilos 2.6	1,728	Kilos 2	1,730
Gold and Antimony concentrates	75	2,582	79	3,234
Iron ore	19,803	32,763	21,599	35,602
Iron pyrites	345,330	381,878	—	—
Lead ore	3,620	82,423	445	9,065
Manganese ore	1,971	7,394	904	5,424
Tin ore	81	18,432	31	12,376
Tin (Metal)	—	—	1	678
Wolfram... ..	49	6,147	90	12,032
Zinc	114	1,134	—	—
Total value in dollars or milreis	—	1,137,099	—	1,290,807
„ „ £ sterling ...	—	£177,672	—	£286,846

TABLE 484.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Coal	—	—	—	—	—	—	—	—
Iron ore	1	—	1	—	—	—	1	2.16
Other mines	8	—	8	—	—	—	8	2.25
Total for 1901 ...	9	—	9	—	—	—	9	1.88
Total for pre- ceding year }	6	—	6	1	—	1	7	1.22

There were seven deaths from accidents in quarries during the year 1890, giving a death-rate of 1.48 per 1,000 persons employed in that year.

* Given under Cupreous Iron Pyrites.

Portuguese East Africa.

Coal, gems, and gold are said to have been discovered in the district of Lourenço Marques,* and coal on Inyack Island close to Delagoa Bay. Coal has also been found on the Catembe River, some 40 miles from Lourenço Marques, and much prospecting is going on. Coal of moderate quality abounds at Tete.†

According to Consul Belcher,‡ 13,632 ozs. of gold, valued at £52,577, were exported from Beira in 1901; but most of the metal had been obtained from mines in Rhodesia.

The amount of gold actually produced in Portuguese East Africa at the present time is small.

PORTUGUESE NYASSALAND.§

Portuguese Nyassaland possesses large deposits of coal and the ores of iron, gold, and silver. The ores of copper, nickel, and zinc have been discovered, besides graphite, marble, and slate.

Coal.—There are two known coalfields—one within a few miles of the natural harbour afforded by Pemba Bay, the other around Itule, on both sides of the Lugenda River.

Iron.—Magnetic ore occurs over a considerable area just west of the Pemba coalfield, and is smelted on a small scale by the natives.

Gold.—The principal known gold region is the district about the Rarico River, a tributary of the Lugenda.

Prussia. (See GERMAN EMPIRE.)

Roumania.||

The minerals worked in Roumania are lignite, petroleum, rock salt, and stone.

Lignite.—Lignite is found in very many parts of the country, and the beds are sometimes as much as 20 feet thick; but lignite mining is at present in its infancy. The largest mines are at Margineanca, and are worked by the State; they produce 51,000 tons yearly. Great hopes are based upon the utilization of lignite by making it into briquettes with petroleum residues; the fuel so produced is of excellent quality and is cheaper than Welsh coal.

Petroleum.—Petroleum is, and probably always will be, the mainstay of the mining industry in Roumania. The oil-bearing regions are shown on maps in the reports of M. Rommenhöller¶ and Mr. Sutherland.** The illustrated pamphlet of the latter author affords an excellent account of the present state of the petroleum industry. The mineral is obtained partly from shallow hand-dug wells and partly from bore-holes. The Prahova district yields more than any other at the present time. The official statistics†† show that there are 68 productive bore-holes and 882

* *Zeitschr. f. prakt. Geol.*, 1899, p. 267. Despatch from H.M. Minister at Lisbon to Foreign Office. Consul Ross, "Trade of Lourenço Marques and District for the year 1898." *Dipl. and Cons. Reports*, No. 2235, Ann. Ser., 1899 [C. 9044-61].

† Wallis, "Report on the Trade of Tete and District for the year 1901." *Dipl. and Cons. Reports*, No. 2812, Ann. Ser., 1902 [Cd. 786-116], p. 7.

‡ "Trade of Beira for the year 1901." *Dipl. and Cons. Reports*, No. 2799, Ann. Ser., 1902 [Cd. 786-103], p. 15.

§ Worsfold, "Portuguese Nyassaland," London, 1899. *Handbook of the Nyassa Company*, London, 1898, p. 30.

¶ Alimanestiano, "L'Exploitation des Mines en Roumanie." *Courrier de Roumanie*, Nos. 4, 5, and 6; Bucharest, 1898-99; and "Der Bergbau Rumäniens," *Allgemeine bergmännische Zeitschrift*, No. 5, 1899, p. 16; *Le sous-sol de la Roumanie*, 1900, and Crémer, *Richesse Minérale de la Roumanie*, 1900.

** Rommenhöller, *La Roumanie*, Rotterdam, 1898.

†† "The Petroleum Industry of Roumania," reprinted from the *Petroleum Review*, April 1899.

†† *Statistica Industriei Miniere din tara (Afara de Cariere) de la 1 Julie 1897—30 Junie 1898*; Bucharest, 1899, p. 58; and Crémer, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation des Pétroles Roumains présentée au Jury de la Classe 63*.

ROUMANIA—*continued.*

productive wells. The deepest bore-hole is only 550 metres deep, whilst the wells are often only 20 to 100 metres deep. According to M. Alimanestiano, who is Chief of the Mining Department, the most pressing need of the petroleum industry is the establishment of a pipe-line from the wells to the Danube, or even to Costantza. Given cheap transport, Roumania could supply central Europe with oil at lower prices than any of its competitors.

Salt.—The country is blessed with rich deposits of salt, which extend for a distance of about 100 miles along the Carpathians. One bed of pure rock salt is from 800 to 1,000 feet thick.* The industry is a Government monopoly, and much of the work in the rock salt mines is carried on by convict labour. About 22,000 tons of rock salt are exported annually to Turkey and 3,000 to Russia. M. Alimanestiano is of opinion that the export trade might be extended with profit to Africa and even India.

Stone.—Roumania has hitherto been largely dependent upon the foreigner for stone and building materials generally, though ample supplies exist in the country itself, especially in the Dobrudja. However, the paving stones from Belgium and France have now been to some extent ousted by native products, in spite of the difficulties which beset the Roumanian quarry-owner in the shape of expensive transport and want of trained workmen. As these obstacles disappear, quarrying may be expected to become an important industry in the country.

There are already five important granite quarries in the Dobrudja, and the total number of quarries in the country is shown by the official statistics† to be very considerable. There are a few marble quarries.

For centuries the alluvia of many of the rivers have been known to carry gold, and a little of the precious metal is occasionally washed from the sands by the peasantry; but the gold resources of Roumania are as yet unknown. The same may be said of the ores of cobalt, copper, lead, manganese, mercury, iron, and silver, and of the beds of anthracite and coal, which have been found cropping out in various parts of the country.

TABLE 485.

OUTPUT of MINERALS during the Years 1900 and 1901.‡

Mineral.	1900.		1901.	
	Metric Tons.	Value.	Metric Tons.	Value.
		Lei.		Lei.
Lignite	86,000	648,000	105,000	788,000
Petroleum	385,000	11,550,000	320,000	10,500,000
Salt	92,000	(Monopoly.)	90,000	(Monopoly.)
Stone	1,900,000	1,570,000	980,000	830,000
Total value in Lei	—	13,768 000§	—	12,118,000§
„ „ £ Sterling	—	£550,720	—	£484,720

* Crémer, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation du Gisement de sel gemme de la Roumanie présentée au Jury de la Classe 63.*

† *Statistica Carierelor din țara*, 1897; Bucharest, 1898.

‡ Official Return furnished by the "Département de l'Agriculture, du Commerce, de l'Industrie et des Domaines" Bucharest.

§ Excluding value of salt.

Russia.

Whether judged by the number of persons employed, or by the value of the products obtained, the workings in Russia for coal, gold, iron ore, manganese ore, petroleum, platinum, and salt, are worthy of much attention.

Coal.—The quantity of coal raised in Russia has risen very considerably of late, for the total output in 1882 was $3\frac{3}{4}$ million tons, and 16 million tons in 1900. The most productive coal region of Russia is the Donetz Basin, in the province of Ekaterinoslav, which yields anthracite and bituminous coal. In 1899 there were 135 different collieries in this basin, with pits varying in depth from 28 yards (26 metres) to 417 yards (382 metres). The number of persons employed in 1898 was about 40,000 underground and 10,000 above ground. The output of the basin, which in 1880 was only 624,000 tons, had risen in 1898 to 7,453,000 tons. Next in importance comes Poland, with true coal and brown coal. The Dombrowa Basin,* in Poland, is a continuation of the great Silesian Coal Basin; it is now yielding about 4 million tons a year, or about half the output of the Donetz Basin. These two basins together produce about two-thirds of the coal of Russia. The remaining coal regions† worth mentioning are the Urals, the Eskibastus district south of Omsk, the Kusnetski Basin, in the Government of Tomsk, and the Tkhibulski district, in the Caucasus.

Coal is abundant in Siberia, both east and west, and even along the line of the Trans-Siberian Railway; but the quality is poor. A long list of localities is given by Mr. Cooke in his report upon the Trans-Siberian Railway.‡ The Eskibastus coalfield alone, in the neighbourhood of Pavlodar, on the Irtysh, is estimated to have reserves of more than 3,000 millions of tons.

The coal of Saghalien is being worked on a large scale, and is used for steamships.

Copper.—Most of the copper of Russia comes from the Urals and the Caucasus. The yield for 1900 from the Urals was 3,710 tons.

Gold.—In 1898 the output§ of gold of Russia was 2,346 poods, or 1,235,764 ozs. The gold is derived mainly from alluvial deposits in the Urals, and in Eastern and Western Siberia; the localities where it is being worked are shown upon a useful map prepared by M. de Batz.|| According to Rickmer,¶ a large number of persons are employed in Eastern Bokhara in washing auriferous gravel. The value of the gold obtained is estimated at £20,000 to £30,000 annually. The production of gold from the Urals in 1900 was 291,235 ozs.**

Iron.—The present state of the iron industry in Russia is shown by an excellent map drawn by Mr. Archibald P. Head.†† Nearly one-half of the pig-iron of the Empire is made in South Russia, most of the ore being obtained from the rich deposits in the Krivoy Rog district.

Manganese ore.‡‡—The great manganese district of Russia is in the province of Kutais and county of Sharapan, and it extends over the whole central part of the basin of the River Kvirila. The beds of manganese ore are interstratified with sand and clay of Eocene age. The richest deposits cover an area of more than 50 square miles, and the mining district is estimated to contain at least a hundred million tons of workable ore. The ore, as exported, contains about 50 per cent. of metallic manganese, 6 to 9 per cent. of silica, and only 0.12 to 0.17 per cent. of phosphorus.

* Consul-General Murray and Vice-Consul Kiemens, "Trade of Poland and Lithuania for the year 1899," *Dipl. and Cons. Reports*, No. 2425, Ann. Ser., 1900 [Cd. 1-62], p. 37.

† Cooke, "Coal Crisis in Russia," *Dipl. and Cons. Reports*, No. 523, Misc. Ser., 1900 [Cd. 2-6], p. 6.

‡ *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 17.

§ Cooke, "Trans-Siberian Railway," *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 18.

|| "The auriferous deposits of Siberia," *Trans. Am. Inst. M.E.*, Vol. XXVIII., 1898.

¶ "Travels in Bokhara," *Geogr. Jour.*, London, Vol. XIV., 1899, p. 606.

** Cooke, "Mineral and Metallurgical Industries of Russia," *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Cd. 430-10].

†† "The South Russian Iron Industry," *Jour. Soc. Arts.*, Vol. LI., 1902, p. 75.

‡‡ *Caucasian Manganese*. Kutais, 1900. London, 1901.

RUSSIA—continued.

Peat.—Though peat may appear an unimportant fuel compared with coal, it nevertheless is so abundant and is so easily obtained in certain localities far removed from railways that it deserves special attention. In Russia there is an office under the Ministry of Agriculture and Domains (*Bureau de l'Industrie des Tourbes*) which supervises the peat industry. Many of the turbaries have been carefully tested by borings, and an official map exhibited at the Paris Exhibition gave information about 113 turbaries, occupying an area of 398 sq. miles (103,000 hectares); several are from 19 to 38 sq. miles (5,000 to 10,000 hectares) in area and over.

*Petroleum.**—The production of the oil wells near Baku continues to increase, the total output being 67,454,372 barrels (42 gallons) of crude oil in 1901 against 60,076,391 barrels in the previous year. The Sabounchi field was the most productive of the five oil-fields near Baku. In the five districts there were in 1901 altogether 3,151 wells at which work was going on; 1,354, or less than half, were producing, whilst the remainder were either being bored, deepened, cleared out, or prepared. The average depth of the producing wells in 1901 was 440 feet on the Balakhany field, 980 on the Sabounchi, 1,470 on the Romany, 1,239 on the Bibi-Eibat, and 462 on the Binagadi.

Russia's wealth in petroleum is not confined to the Baku district, wells at Grozny are yielding large quantities of oil, and great hopes are based upon the new oil field near the river Uchta† on the boundary of the provinces of Archangel and Wologda.

Platinum.—All the platinum is obtained from alluvial deposits in the Urals; the output in 1900 was 174,846 ozs.‡ Russia produces 96 per cent. of the world's supply of this metal.

Quicksilver.—All the quicksilver is obtained in the district of Ekaterinoslav, in South Russia; the deposits were first worked in 1885.

Salt.—More than half the salt is a harvest from lakes, especially in Astrakhan and the Crimea. Much salt is obtained by evaporating brine pumped up from boreholes, and some by mining beds of rock-salt.

In Western Siberia salt is obtained from a number of lakes which partially dry up in summer and in hot years deposit crusts of salt from two to four inches thick. The great Burlinsk Lake yields 20,000 tons yearly in this fashion.§

In Eastern Siberia the salt is obtained from springs, and from deposits of rock salt.§

Sulphate of sodium.—The great Marmischanski Lake, in the Government of Tomsk, is estimated to contain more than a million tons of sulphate of sodium; about 1,600 tons are obtained from it annually, and some of it is used for making soda.§

Sulphur.¶—Native sulphur occurs in various parts of the Empire; it is worked in Daghestan and at Czarkowsky, in the Government of Kielce, near the Austrian frontier.

Zinc ore.—The zinc ore is obtained from deposits of calamine in Poland.

TABLE 486.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1896, 1897, 1898 and 1899.¶¶

Year.					Total Number of Persons Employed.
1896	...	...	...	...	242,463
1897	...	...	...	...	244,324
1898	...	...	...	...	286,983
1899	...	...	...	...	341,702

* Consul Stevens, "Trade of Batoum and District for the year 1901." *Dipl. and Cons. Reports*, No. 2782, Ann. Ser., 1902 [Cd. 786-86].

† B. von Vangel, "Petroleum in the Uchta District." *Boring & Drilling*, Vol. II., 1901, p. 89.

‡ Cooke, "Mineral and Metallurgical Industries of Russia," *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Cd. 430-01].

§ Thiess, "Die Salzgewinnung in Siberien." *Zeitschr. B. H. Salinenwesen*, Vol. XLVI., 1898, p. 249.

¶ Consul-General Murray, "Trade of Warsaw and District for the year 1897." *Dipl. and Cons. Reports*, No. 2135, Ann. Ser., 1898 [C. 8648-157].

¶¶ Official return furnished by the Scientific Mine Committee, St. Petersburg.

RUSSIA—continued.

TABLE 487.

EMPLOYED at the PRINCIPAL KINDS of MINES and other MINERAL WORKINGS during the Years 1897, 1898, and 1899.*

Kind of Mineral worked.	Persons Employed during the Year.		
	1897.	1898.	1899.
Coal	65,471	70,203	85,446
Copper ore	3,998	3,965	3,857
Gold	75,212	77,518	98,045
Iron ore	39,490	41,786	48,359
Manganese	2,849	2,349	4,417
Naphtha	11,936	18,616	25,809
Platinum	8,050	8,034	9,197
... ..	18,104	15,582	20,377
... ..	1,359	1,229	1,222

TABLE 488.

PERSONS EMPLOYED at GOLD MINES during the Years 1897, 1898, and 1899.*

Year.	Number of Persons Employed.				
	Urals.	West Siberia.	East Siberia.	Finland.	Total.
1897	36,223	10,405	28,558	26	75,212
1898	37,483	11,141	28,831	63	77,518
1899	48,545	24,691	24,737	72	98,045

TABLE 489.

QUANTITY of MINERALS produced during the Years 1899 and 1900.*

Mineral.	District whence Obtained.	1899.	1900.
		Quantity.	Quantity.
Asbestos	Ural	Metric Tons. 1,006	Metric Tons. 3,845
Asphalt and mineral pitch	Syran, Caucasus	12,002†	†
China clay	Volyn, Chernigov	6,007†	†
Chrome ore	Perm, Orenburg, Oufa	15,780	18,333
Coal { Anthracite Coal Lignite }	Donetz, Poland, Moscow, Ural, Kutais, Turkestan, Tomak, Kirghiz Steppe, Saghalien, Oussouly.	13,906,443	16,151,807

* Official return furnished by the Scientific Mine Committee, St. Petersburg.

† Figures not yet available.

‡ The figures relate to the year 1898, later information not being available.

RUSSIA—continued.

TABLE 489—continued.

QUANTITY of MINERALS produced during the Years 1899 and 1900—continued.

Mineral.	District whence Obtained.	1899.	1900.
		Quantity.	Quantity.
		Metric Tons.	Metric Tons.
Cobalt ore and regulus	Caucasus	3†	216
Copper	Ural, Western Siberia, Caucasus, Finland	7,063	8,358
Gold	Ural, Eastern and Western Siberia, Lapland	Kil. 38,868†	Kil. 38,786
Iron (pig)	Ural, Central Russia, Poland, Southern Russia, Northern Russia, Siberia, Finland.	2,710,972	2,907,399
Iron pyrites	Ural, Toula, Novgorod	24,590†	23,154
Lead	Tomsk, Transbaikai, Kirghis Steppe, Caucasus, Turkestan	176	239
Manganese ore	Kutais, Ural, Ekaterinoslav	656,842	802,234
Petroleum	Caucasus, Transcaspian, Turkestan	8,599,344†	9,837,322†
Phosphorite	Beesarabia, Kostroma, Podolia, Smolensk	1,868†	25,863
Platinum	Ural	Kil. 5,946†	Kil. 5,488†
Quicksilver	Ekaterinoslav	362	305
Salt { Rock salt Lake salt Salt from brine }	Astrakhan, Perm, Ekaterinoslav, Orimea, Kharkov, Orenburg, Tomsk, Caucasus, &c. }	1,506,836†	1,968,005
Silver	Tomsk, Transbaikai, Kirghis Steppe, Caucasus, Finland ..	Kil. 1,385	Kil. 3,498
Sulphate of sodium	Tiflis, Kuban, Tomsk, Vologda	5,049†	•
Sulphur	Daghestan, Poland, Turkestan	1,018†	1,587
Tin	Finland	—	4
Zinc	Poland	6,331	5,966

TABLE 490.

DEATHS from ACCIDENTS at the MINES and other WORKINGS for MINERALS during the Years 1896, 1897 and 1898.||

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1896	272	1.12
	1897	308	1.26
	1898	463	1.61

Saba. (See DUTCH WEST INDIES.)

Sahara,¶

There are three important salt deposits in the Sahara, all of which are due to the natural evaporation of salt lakes, viz., the Sebka d'Idgil, which supplies Western Africa; the Taodeni bed, which furnishes salt to the Sahel, the Niger district, and the Congo; and lastly, the Sebka de Bilma, which sends its produce to the east and the region of Lake Tchad.

* Figures not yet available.

† The figures relate to the year 1898.

‡ Cooke, "Mineral and Metallurgical Industries of Russia." *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Od. 430-10].

¶ Official return furnished by the Scientific Mine Committee, St. Petersburg. Later figures are not available.

¶ Dastre, "Le Sel," *Revue des Deux Mondes*, Vol. LXXI, 1901, p. 219.

Sandwich Islands.*

The mineral industries of the Sandwich Islands are of slight importance. There are large deposits of gypsum, and red and yellow ochre; sulphur is found around the volcanoes.

The extraction of salt from sea water is carried on to supply local wants.

Saxony. (See GERMAN EMPIRE.)

St. Martin. (See DUTCH WEST INDIES.)

Senegal.†

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives. In 1898, 129 kilograms of gold, valued at £15,464, were exported.

Servia.‡

According to an official map Servia is richly endowed with mineral wealth, but until railways have been constructed and the existing cart roads improved it is idle to expect that it will become a great mining country. It possesses deposits of the ores of antimony, arsenic, chromium, copper, gold, iron, lead and mercury, besides coal, graphite, gypsum, magnesite, sulphur, marble and other stones for ornamental and building purposes.

Coal.—Most of the coal region lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are at Dobra, on the Danube. The coal is of Liassic Age.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley, near Tschuka.

Thick beds of Tertiary lignite occur at Senje, Sisovac, Jelasnica, and in many other parts of the country.

Copper and Iron.—The ores of these two metals have been worked in the neighbourhood of Maidanpek.

Gold.—This was worked in Servia by the Romans, and then many centuries later by the Austrians. Turkish invasions put a stop to mining, but now there are signs of a revival and extension of the industry. The gold is found in alluvial gravel and in quartz veins, especially in the district west of the River Timok, which forms the frontier of Bulgaria. Near Glogovica there are many veins of gold-bearing pyrites.

TABLE 491.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.

Year.							Under and Above-ground.
1900	...	...	...	...	...	...	1,835
1901	...	...	...	...	...	...	2,271

In addition to the above, there were 120 persons employed in and about quarries.

* Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.

† Consul Arthur, "Trade of Senegal and Dependencies for the year 1898," *Dipl. and Cons. Reports*, No. 2372, Ann. Ser., 1900 [Cd. 1-9], and *Min. Jour.*, Vol. LXVIII., 1898, p. 221.

‡ Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce, and Industry, Belgrade; Consul Macdonald "Trade of Servia for the years 1897-98," *Dipl. and Cons. Reports*, No. 2207, Ann. Ser., 1899 [C. 9044-33]; Antula, *Revue générale des gisements métallifères en Serbie*. Paris, 1900; and Jastrow, "The Mining Industries of Servia," *Eng. Min. Jour.*, Vol. LXX., 1900, p. 523.

SERVIA—continued.

TABLE 492.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony (regulus) ...	119	164,339	243	204,120
Brown coal ...	77,644	592,152	99,053	759,673
Chrome ore ...	—	—	100	7,000
Coal... ..	55,559	833,472	44,275	712,350
Copper (metal) ...	250	475,000	59	80,750
Gold (fine)... ..	—	—	Kilos. 30	98,881
Lead and zinc ore... ..	—	—	175	12,933
Lignite	26,492	133,598	26,713	134,898
Millstones	395	31,602	225	18,036
Silver (metal)	—	—	12.7	1,235
Total value in francs ...	—	2,230,163	—	2,029,876
" " £ sterling ...	—	£89,206	—	£81,194

TABLE 493.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.

Year.	Number of Deaths.	Death rate per 1,000 Persons Employed.
1900	2	1.09
1901	1	.44

Siam.*

Siam produces gems, gold, and tin ore. The gems, rubies and sapphires, are obtained from shallow diggings on the flanks of the Patat range in the Cambodian Peninsula. The gem pits afford employment to five or six thousand Shans and Laos, and the value of the output is estimated to be about £300,000 annually. Alluvial gold exists and has been worked in many parts of Siam, notably near Lophburi; reef-mining has been carried on at Kabin and Wattana.

The tin mines of the State are chiefly situated in the Siamese Malay Provinces, along the edge of the granites of the main ridge which forms the watershed of the peninsula. The total annual output of metallic tin may be estimated at about 4,000 tons, giving employment to over 15,000 persons, mostly Chinese. The royalty on tin has now been reduced to 10 per cent. of the output, and this will enable a certain number of mines, which would not pay under the old royalty, to be re-worked.

Singkep. (See DUTCH EAST INDIES.)

Soudan. (See EGYPT, FRENCH SOUDAN AND SAHARA.)

* M.S. communication from H. Warrington Smyth, and Bel, "Aperçu sur les gîtes minéraux de l'Indo-Chine Centrale." *Bull. Soc. Ind. Min.*, Vol. XII, 1898, p. 384.

Spain.*

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrites than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality, and it has lately become an important supplier of manganese ores.

The total number of persons employed in and about mines in Spain is 87,382.

Coal.—Ten of the provinces produce coal. The total output is two-and-a-half million tons, more than half coming from Asturias. Anthracite is worked on a small scale in the province of Cordova, and lignite in nine provinces; but the total output is insignificant.

Copper.—The Rio Tinto mines and its neighbours show no signs of impoverishment, for the output of the province of Huelva was 2,625,944 tons. Compared with this figure, the production of the other copper-bearing provinces, such as Seville, &c., is small.

Gold.—Mines are being worked in the province of Corunna.

Iron Ore.—The province of Biscay, which includes the Bilbao district, is the great stronghold of the iron industry in Spain; most of the workings are open quarries. The total output of the province in 1901 was 4,969,451 tons, which is a diminution of 392,345 tons compared with the previous year.

Next in importance after Biscay comes the province of Santander with an output of 1,117,239 tons.

Lead.—Most of the lead comes from the provinces of Jaen and Murcia; much of the ore, and especially that of Murcia, contains a notable amount of silver.

Manganese Ore.—Mining for manganese, comparatively speaking a new industry, is almost entirely confined to the province of Huelva. The output of the province in 1901 was 59,963 tons.

Quicksilver.—From time immemorial the Almaden mine, in the province of Ciudad Real, has been renowned as a producer of cinnabar. The other quicksilver mines are of comparatively little importance; several are worked in the province of Oviedo.

Salt.—Much of the salt is obtained from sea water, especially in the vicinity of Cadiz.

Sulphur.—In addition to the sulphur contained in cupreous iron pyrites, Spain has mines of native sulphur in the provinces of Albacete and Murcia.

Tin Ore and Wolfram.—These two minerals occur together, as they do elsewhere, in the province of Pontevedra.

Zinc.—Murcia has regained its position as the principal zinc-producing province, Santander taking the second place. The two provinces between them produce about $\frac{3}{4}$ of the country's total.

TABLE 494.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.†

Year.	Men.	Women.	Boys.	Total.
1900	71,052	3,386	9,224	83,662
1901	74,833	2,891	9,658	87,382

* *Estadística Minera de España correspondiente al año de 1901.* Madrid, 1902.

† *Estadística Minera de España correspondiente al año 1900 and ibid., 1901,* Madrid, p. 24.

SPAIN—continued.

TABLE 495.

PERSONS EMPLOYED in the PRINCIPAL MINING INDUSTRIES during the Years 1900 and 1901.*

Kind of Mines.	1900.				1901.			
	Men.	Women.	Boys.	Total.	Men.	Women.	Boys.	Total.
Brown coal	847	31	108	986	914	31	80	1,025
Coal and anthracite ...	15,963	1,089	2,635	19,687	16,430	1,106	2,555	20,091
Copper ore and cupreous pyrites.	8,638	191	1,034	9,863	9,912	334	1,119	11,365
Iron ore	21,372	220	1,814	23,406	20,144	249	2,380	22,773
Lead ore	16,526	974	2,563	20,063	19,871	592	2,647	23,110
Quicksilver ore	1,747	2	200	1,949	1,899	2	174	2,075
Zinc ore	1,437	165	262	1,864	1,624	137	226	1,987
Other mines	4,522	714	608	5,844	4,039	440	477	4,956
Total	71,052	3,386	9,224	83,662	74,833	2,891	9,658	87,382

TABLE 496.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Aluminous earths	420	10,500	305	7,630
Anthracite	68,427	1,190,076	85,266	950,716
Antimony ore	30	4,500	10	750
Arsenical Pyrites	515	2,575	1,323	6,641
Asphalt (rock)	4,193	43,160	3,956	40,687
Barium sulphate	833	7,840	1,067	17,061
Brown coal	91,133	507,337	95,867	506,629
China clay	3,794	40,171	2,220	8,540
Clay	770	4,550	185	463
Coal	2,514,545	23,501,618	2,566,591	28,932,395
Copper ore	2,006	105,235	23,089	45,755,819
Cupreous iron pyrites... ..	2,712,708	46,124,832	2,649,276	
Fluor spar	4	300	—	—
Gold ore... ..	1,300	39,000	1,595	47,850
Iron ore	8,675,749	37,994,605	7,906,517	40,832,382

* Estadística Minera de España correspondiente al año 1900 and 1901 Madrid, p. 24.

SPAIN—continued

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901*—
continued.

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Iron pyrites	34,638	121,235	33,953	179,483
Jet	2	250	—	—
Lead ore... ..	131,457	27,248,138	174,826	18,663,861
Lead ore, argentiferous	182,016	34,376,448	207,183	33,577,900
Manganese ore	112,897	1,901,607	60,325	1,007,067
Mineral waters... ..	19,239,928	723,721	18,806,684	708,920
Onyx	58	1,100	164	2,622
Phosphorite	4,170	92,950	4,220	84,400
Quicksilver ore... ..	30,216	5,521,185	28,267	5,900,537
Salt	450,059	4,172,674	345,090	2,999,938
Silver ore	742	655,340	391	395,783
Silver ore, ferruginous	22,248	333,205	27,726	379,849
Stearite	2,100	224,000	2,200	145,303
Sulphur rock	64,364	549,733	49,856	396,561
Tin ore (dressed)	47	35,815	425	50,455
Topaz	kilos. 95	3,755	kilos. 310	5,625
Tungsten ore (Wolfram)	1,958	501,670	6	2,440
Zinc ore	86,158	3,088,254	119,708	4,029,025
Total values in Pesetas ...	—	189,137,559	—	179,725,525
" " " £ sterling ...	—	£7,565,502	—	£7,189,491

TABLE 497.

DEATHS from ACCIDENTS at MINES during the Years 1900 and 1901.†

Year.	Number of Deaths by Accidents.	Number of Persons seriously Injured.	Death-rate per 1,000 Persons Employed.
1900.. 	227	205	2.71
1901... 	225	359	2.57

* *Estadística Minera de España correspondiente al año 1900 and ibid. 1901, Madrid, p. 24.*

† " " " " " " pp. 26 and 27.

SPAIN—continued.

TABLE 498.

DEATHS from ACCIDENTS at MINES, classified according to CAUSE, during the Years 1900 and 1901.*

Cause.	1900.		1901.	
	Number of Deaths by Accidents.	Percentage of Total.	Number of Deaths by Accidents.	Percentage of Total.
Falls of ground	51	22.5	59	26.2
Explosions of firedamp	1	0.4	7	3.1
Blasting	13	5.7	21	9.3
Suffocation by gases	4	1.8	13	5.8
Falling down shafts	21	9.2	28	12.5
Breaking of machinery, &c.	39	17.2	29	12.9
Miscellaneous	98	43.2	68	30.2
Total	227	100.0	225	100.0

Spanish Possessions. (See CANARY ISLANDS.)

Spitzbergen.†

Coal has been discovered in several places in Spitzbergen. Bear Island is said to possess workable seams of excellent coal.

Sumatra. (See DUTCH EAST INDIES.)

Surinam. (See DUTCH GUIANA.)

Sweden.‡

Coal.—All the Swedish collieries are in Scania, the most southerly province of the kingdom. The seams, which are of Rhætic age, are interstratified with beds of fire-clay, and the two minerals are worked together.§ The thickness of the coal seams, including the partings of shale, varies from three to five feet.

Copper.—The well-known Stora Kopparberg mine close to Falun furnishes much of the copper of Sweden, some of the silver, and nearly all of the gold.

* *Estadística Minera de España correspondiente al año 1900 and ibid. 1901*, Madrid, pp. 26 and 27.† *B.u.h. Zeitung*. Vol. LIX., 1900, p. 476.‡ *Bildrag till Sveriges Officiella Statistik för år 1901*, Stockholm, 1902.§ Nordenström, *L'industrie minière de la Suède*, Stockholm, 1897.

SWEDEN—continued.

Iron ore.—Sweden has long been famous as an iron-producing country, and its reputation is due partly to the excellence of its ores and partly to the fact that charcoal is employed almost exclusively as the fuel for the blast furnaces. Sweden likewise exports much iron ore, and the quantity sent away is increasing. The big workings at Gellivare and Kirunavara, in the province of Norrbotten, furnished three-sevenths of the total output of Sweden in 1901. The province of Kopparberg with numerous mines comes next in importance.

Peat.—The table of production takes no account of either the peat diggings or of the stone quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould.

Stone.—Granite, using the word in its commercial sense, is quarried on the West Coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden.

Zinc.—The Ämmeberg mines supply most of the zinc ore, which is exclusively blende.

TABLE 499.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1900 and 1901.

Year.	Kind of Workings.	Under-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1900	Coal mines ...	1,281	128	1,409	385	40	425	1,834
"	Iron " ...	4,072	129	4,201	4,548	1,091	5,639	9,840
"	Other " ...	816	3	819	746	355	1,101	1,920
"	Feldspar quarries ...	72	—	72	123	72	195	267
	Total for 1900 ...	6,241	260	6,501	5,802	1,558	7,360	13,861
1901	Coal mines ...	1,440	142	1,582	392	124	516	2,098
"	Iron " ...	4,266	163	4,429	4,842	1,204	6,046	10,475
"	Other " ...	822	2	824	664	305	969	1,793
"	Feldspar quarries ...	59	—	59	90	68	158	217
	Total for 1901 ...	6,587	307	6,894	5,988	1,701	7,689	14,583

SWEDEN—continued.

TABLE 500.

QUANTITY of MINERALS obtained from MINES and FELDSPAR QUARRIES during the Years 1900 and 1901.

Mineral.	Year.			
	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum	167	17,610	121	13,378
Coal	252,320	2,202,884	271,509	2,355,228
Copper ore	22,725	370,713	23,660	378,188
Copper, sulphate	1,265	500,000	1,224	465,135
Feldspar	15,228	185,830	13,502	163,941
Fire-clay	160,585	249,162	175,876	306,099
Graphite (raw and dressed)	84	11,800	1,783	12,850
Iron ore	2,609,500	14,961,953	2,795,160	14,453,782
Iron pyrites	179	1,540	—	—
Iron, sulphate	183	9,225	140	8,477
Manganese ore	2,651	49,175	2,271	42,000
Manganese ore in powder	450	20,250	500	22,500
Silver and lead ore	5,300	262,137	11,366	210,767
Sulphur	70	7,000	—	—
Zinc ore	61,044	1,908,135	48,630	1,418,126
Other minerals	—	52,466	—	84,276
Total value in crowns	—	20,809,880	—	19,934,747
„ „ £ sterling	—	£1,143,400	—	£1,095,316

TABLE 501.

PERSONS KILLED and INJURED by ACCIDENTS at MINES and FELDSPAR QUARRIES during the Years 1900 and 1901.

Year.	Number of Persons Killed.	Number of Persons Injured.*	Death-rate per 1,000 Persons Employed.
1900	14	370	1.01
1901	10	384	0.68

Switzerland.†

That the mineral industries of Switzerland are of little importance is evident from the following tables ; nevertheless the kinds of mineral which are being obtained from underground workings are numerous, viz.: anthracite, bituminous limestone, brown coal, cobalt and nickel ore, fireclay, gold ore, graphite, gypsum, iron ore, limestone, magnesium sulphate, marble, marl, potstone, salt, sandstone, and slate.

* Injuries causing absence from work for 14 days at least.

† *Rapports des Inspecteurs Fédéraux des Fabriques et des Mines dans les années 1898 et 1899*, Aarau, 1900: *Noties sur la exploitation minérales de la Suisse* Geneva, 1896 ; and *Statistisches Jahrbuch der Schweiz*, Bern, Vol. X., 1901.

SWITZERLAND—continued.

Anthracite.—Two mines, Chandoline and Granges, produce annually 1,500 to 2,000 tons of anthracite containing a high percentage of ash.

Bituminous limestone.—The asphalt rock of the Val de Travers, which is exported from Switzerland to various countries, is a bituminous limestone of Cretaceous age. The bed is 4 to 8 m. thick, and contains about 10 per cent. of bitumen.

Brown coal and cement.—With reference to the Swiss brown coal, which is of Miocene age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure.

Iron.—The largest workings for iron are at Delsberg, a mine which employs 136 workmen.

Salt.—Switzerland possesses five workings for salt, viz., Bex salt mine in the Rhone valley; the brine wells of Rheinfelden, Ryburg, and Kaiseraugst, in the Canton Aargau; and the brine well Schweizerhalle in the Canton Baselland. The output for 1900 was 49,284 tons.

TABLE 502.

NUMBER OF PERSONS EMPLOYED at MINES and UNDERGROUND QUARRIES during the Years 1900 and 1901.

Kind of Workings.	1900.		1901.	
	Number of Works.	Number of Persons Employed.	Number of Works.	Number of Persons Employed.
Mines	22	405	24	424
Underground quarries ...	115	1,472	104	1,217
Total	137	1,877	128	1,641

TABLE 503.

NUMBER OF WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year 1901.*

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Anthracite	5	—	52	—
Asphalt	1	—	118	—
Brown coal	6	—	43	—
Brown coal and cement stone ...	—	—	—	—
Cement stone and hydraulic limestone ...	—	27	—	264
Cobalt and nickel ores	4	—	54	—
Gold and copper ore	1	—	3	—

SWITZERLAND—continued.

NUMBER of WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year 1901—continued.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Graphite	1	—	7	—
Gypsum	—	12	—	69
Iron ore	1	—	69	—
Lead ore, argentiferous	3	—	34	—
Limestone... ..	—	3	—	9
Magnesia, sulphate of	1	—	16	—
Marble	—	1	—	10
Potstone	—	2	—	33
Salt (rock salt)	1	—	28	—
Sandstone... ..	—	10	—	232
Slate	—	49	—	600
Total	24	104	424	1,217

TABLE 504.

QUANTITY of MINERALS produced during the Years 1900 and 1901.

Mineral.	Year.	
	1900.	1901.
	Metric Tons.	Metric Tons.
Anthracite	*	*
Bituminous limestone	*	*
Brown coal	*	*
Cement (Portland)	203,663	156,135
" (Roman)	17,497	16,514
Cobalt and nickel ore... ..	*	*
Fireclay	*	*
Gold ore	*	*
Graphite	*	*
Gypsum	51,240	45,987
Iron ore	*	*
Lime (hydraulic)	283,320	187,016
Magnesium sulphate	*	*
Marble	*	*
Marl	*	*
Potstone	*	*
Pozzolana	16,200	15,400
Salt (Bex mine and brine wells)	49,284	50,591
Sandstone	*	*
Slate	*	*

* Figures not available.

SWITZERLAND—continued.

TABLE 505.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1900 and 1901.

Kind of Workings.	1900.		1901.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines	2	4.94	2	4.72
Underground quarries	1	.68	4	3.29

Tong-King. (See INDO-CHINA.)

Tunis.*

Tunis cannot be called an important mining country at the present time.

Iron.†—There are large deposits of iron ore in the Regency, and it is considered that they deserve the attention of British ironmasters.

Phosphate of lime.‡—This mineral is found in the Lower Eocene rocks, especially to the north and south of the mountain chain running from Wady Stah, near Gafsa, to Tamerza; the beds may be followed for a distance of about 40 miles. The crude rock contains from 58 to 62 per cent. of phosphoric acid.

The value of the phosphate deposits at Gafsa is now beyond all question. The company§ employs 850 persons at its workings.

The line open to the public is 243 kilometres (157 miles) long, and 5 more kilometres (3 miles), for the use of the mines and drying works, make a total of 248 kilometres (160 miles) belonging to the company.

Salt.—This mineral is obtained from salt marshes and lakes. The total output of salt in 1901 was 16,900 metric tons, of which 9,500 were produced at salt pans worked by the State and 7,400 tons from Ras Dimas salt lake. The average value may be reckoned at about 22 francs per ton.

Zinc ore.—The lead and zinc mines of Tunis employ about 2,000 workmen, of whom 680 are Europeans, and the total value of their output in 1901 was more than £70,120; of this total about two-thirds must be credited to zinc ore.

* Information furnished by the French Government.

† Consul-General Berkeley, "Trade of the Regency of Tunis." *Dipl. and Cons. Reports*, No. 2915, Ann. Ser. [Cd. 786-219], 1902, p. 20.

‡ *Etude des gisements de phosphates de Gafsa et du Chemin de fer de Sfax à Gafsa*, Paris, 1896.

§ *Compagnie des phosphates et du chemin de fer de Gafsa (Tunisie)*. *Rapport du Conseil d'administration*, Paris, 1900, p. 4.

TUNIS—continued.

TABLE 506.

QUANTITY and VALUE of MINERALS produced during the Years 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Flags	200	2,000	—	—
Lead ore	6,864	591,000	8,200	669,000
Limestone	17,929	358,575	34,800	740,880
Marble	—	—	—	—
Phosphate of lime	178,459	3,905,000	172,375	2,642,508
Plaster	13,555	270,000	12,984	601,940
Potter's clay	—	79,400	6,375	7,500
Salt from marshes and salt lakes	9,160	641,000	16,900	372,000
Stone (dressed for building)	—	3,747,000	873,805	1,531,268
„ (broken)	—	—	—	—
Zinc ore (calcined)	16,596	1,108,000	17,900	1,081,000
Total value in Francs	—	10,701,975	—	7,646,096
„ „ in £ sterling	—	£428,079	—	£305,844

Turkey.

The mineral resources of the Ottoman Empire are great, but almost entirely undeveloped. No official statistics are published.

Alum.—A little alum is manufactured.

Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895. In 1900 the quantity exported from Salonica amounted to 267 tons, valued at £2,793.†

Arsenic.—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly; both orpiment and realgar are mined in Macedonia. 270 tons, valued at £4,320, were exported from Salonica in 1900.†

Asphalt.—Bitumen mines are worked at Selenitza, near Valona, and 3,500 tons of mineral were exported in 1901.‡

Boracite.—Borate of calcium, known in the trade as boracite, and to mineralogists as pandermite, is worked near the port of Panderma in Asia Minor. The annual output is about 9,000 tons.‡

* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1900 and pour l'année 1901.*

† Consular Assistant Avalon Shipley, "Trade of Salonica and District for the year 1900." *Dipl. and Cons. Reports*, No. 2,730, Ann. Ser., 1901 [Cd. 786-34]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-99," *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99], p. 23.

‡ Vice-Consul Waugh, "Trade of Constantinople and District for the year 1901." *Dipl. and Cons. Reports*, No. 2,813, Ann. Ser., 1902 [Cd. 786-117].

TURKEY—continued.

Chrome Ore.—Chromite occurs in irregular bunches in serpentine. Daghardi mine exports from 12,000 to 15,000 tons yearly by the port of Déréndjé, in the Gulf of Ismidt. Three mines in the Merkenz-Sandjak of Broussa export 6,000 to 7,000 tons a year.*

Coal.—The only coal mines deserving mention at the present time are at Eregli. The output of the collieries was about 200,000 tons in 1901.*

Copper.—Copper ores are worked in various places. The mines produce annually about 5,800 tons of crude copper. The Arghana Maden is the richest copper mine in Turkey; the average ore contains about 30 per cent. of copper. 1,072 tons of copper, valued at £38,220, were exported from Diarbekr in 1901.*

Emery.—This mineral was discovered in Asia Minor about fifty years ago; the value of the emery shipped from Smyrna in 1901 was £53,028.†

Fuller's earth is quarried on a large scale. The deposits extend over 60 miles in length, and are of varying breadth. The greater part of their area is comprised in the Sandjak of Kutahia, and principally in the Caza of Eskichehir, between the two banks of the Poursaktchai and the left bank of the River Sakaria.*

Gold.—A little alluvial gold is obtained in Thessaly and in some of the valleys of Macedonia. The river Pactolus, so famous in ancient times, no longer yields gold.

Iron.—The deposits of iron ore which were utilized in former days have ceased to be worked.

Manganese.—There are manganese mines in Macedonia and in Asia Minor. 38,100 tons of ore, valued at £114,300, were exported from Salonica in 1900.‡

Marble.—Beautiful mottled marble is now being quarried in the Island of Scio.§

Meerschaum.—Mining meerschaum is an industry of some importance at Sari-sou, Sépétjé, Gheikli and Menlou, and several thousand persons are employed in digging the stone and preparing it for the market.*

Petroleum.—Oil is obtained from wells at Myriofigito and Hora on the north coast of the Sea of Marmora.*

Salt.—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. The rock salt mines are worked near Van in Armenia. 203,128|| tons of salt were produced in the year 1893-4. Rock salt is also widely distributed over many parts of Tehama.¶

Silver-lead.—Deposits of argentiferous galena are worked at Balia, in the Sandjak of Karassi, and at Avnie, in the Caza of Adramit. The Kodja Gumush mine at Balia produces annually from 4,000 to 6,000 tons of ore, yielding 82 per cent. of lead and from 1¼ to 4 per cent. of silver.*

Zinc Ore.—Calamine deposits are worked by a French company in the Island of Scio.§

* Vice-Consul Waugh, "Trade of Constantinople and District for the Year 1901." *Dipl. and Cons. Reports*, No. 2,813 Ann. Ser., 1902 [Cd. 786-117].

† Vice-Consul Hampson, "Trade of Smyrna and District for the Year 1901." *Dipl. and Cons. Reports*, No. 2,854, Ann. Ser., 1902 [Cd. 786-158].

‡ Consular-Assistant Avalon Shipley, "Trade of Salonica and District for the Year 1900." *Dipl. and Cons. Reports*, No. 2,730, Ann. Ser., 1901 [Cd. 786-34].

§ Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-1899." *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99].

|| *Oest. Zeitsch. f. B. u. Huttenwesen*, Vol. XLIV., 1897, p. 223.

¶ Consul Devey "Trade of Jeddah and Hodeidah for the Year 1897." *Dipl. and Cons. Reports*, No. 2,203, Ann. Ser., 1899 [C. 9044-29].

United States.*

The United States are the greatest producers of coal, iron, and copper in the world.

Coal.—The total production of coal in 1901 was 266,151,103 metric tons, of which 61,226,558 tons were anthracite and 204,924,545 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

In the case of anthracite there is an increase of more than 9 million metric tons, and in bituminous coal an increase of more than $12\frac{1}{4}$ million metric tons; taking anthracite and bituminous coal together, there is a net increase of nearly $21\frac{1}{2}$ million metric tons.

Mr. Parker, in his report on coal,† states that in a number of the smaller States there was in 1901 a decided decrease in the tonnage obtained by machines, but on the whole there was a substantial gain over the year 1900; the latter is accounted for by the four of the principal States—Pennsylvania, Ohio, Illinois and West Virginia—having largely increased their output. The output of machine-mined coal in 1901 was 25.68 per cent. of the total.

TABLE 507.

BITUMINOUS COAL MINED by MACHINES in the UNITED STATES during the Years 1897–1901.

States.	Year.				
	1897.	1898.	1899.	1900.	1901.
	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).
Colorado ...	352,400	225,646	527,115	756,025	319,678
Illinois ...	3,946,257	3,415,635	6,085,312	5,083,594	5,774,639
Indiana ...	1,023,361	1,414,342	1,713,125	1,774,045	1,852,058
Kentucky ...	1,299,436	1,366,676	1,625,809	2,339,944	2,254,711
Montana ...	720,345	681,613	843,710	1,045,115	748,981
Ohio ...	3,843,345	5,191,375	6,822,524	8,835,743	9,908,316
Pennsylvania ...	8,925,293	16,512,480	22,000,722	26,867,053	29,591,368
West Virginia ...	673,523	1,323,929	1,881,125	3,418,377	4,817,943
Wyoming ...	555,526	631,431	693,712	653,314	804,826
Other States producing less than half a million tons each annually.	1,311,654	1,650,017	1,770,781	2,011,313	1,770,815
Total ...	22,651,140	32,413,144	43,963,935	52,784,523	57,843,335

The kinds of machines employed are set forth in the following table.

* *Mineral Resources of the United States, Calendar Year 1901.*—United States Geological Survey, Washington, 1902. Many useful statistics relating to the United States and much valuable information concerning mines and minerals all over the world are contained in the annual volumes entitled, *The Mineral Industry: Its Statistics, Technology, and Trade.*

† *Mineral Resources of the United States, Calendar Year 1901.*—United States Geological Survey, Washington, 1902, p. 302.

UNITED STATES—continued.

TABLE 508.

COAL-CUTTING MACHINES employed in the UNITED STATES in the Year 1901, arranged according to their mode of action.

State.	Chain Machines.	Perceptive Machines.	Long Wall Machines.	Total.
Alabama	—	82	—	82
Arkansas	20	—	—	20
Colorado	37	19	6	62
Illinois	121	343	—	464
Indiana	134	122	—	256
Indian Territory	25	22	—	47
Iowa	12	33	8	53
Kansas	2	—	2	4
Kentucky	72	165	—	237
Maryland	—	15	—	15
Michigan	6	25	—	31
Missouri	4	—	20	24
Montana	14	56	—	70
New Mexico... ..	5	1	—	6
North Dakota	5	1	1	7
Ohio	347	24	5	376
Pennsylvania	645	1,412	1	2,058
Tennessee	6	15	—	21
Texas... ..	—	8	—	8
Utah	—	11	2	13
Virginia	6	—	—	6
Washington	—	4	—	4
West Virginia	229	174	—	403
Wyoming	26	48	—	74
Total	1,716	2,580	45	4,341

Copper.—There are three great copper States : Montana, Michigan, and Arizona ; the first furnished in 1901 about 38·2, the second 25·9, and the third 21·7 per cent. of the total output of the whole country, which was 273,173 metric tons of metal, equal to more than half of the world's production.

Gold.—The principal gold-producing States are Colorado with a yield in 1901 of 1,339,673 ozs., and California with a product of 817,121 ozs.

Granite.—The value of granite quarried in 1901 amounted to \$15,976,961. The principal producing States are California, Maine, Massachusetts, New Jersey and Vermont.

Iron.—More than two-thirds of the iron is obtained from the States of Michigan and Minnesota ; the former produced 11½ million metric tons of ore in 1901, and the latter 9½ million tons. The total output of ore from the United States was 29½ million metric tons, an increase 1½ million tons compared with 1900 : about 83 per cent. of the ore is red hematite.

UNITED STATES—continued.

Lead.—Idaho was again the greatest producer in 1901, followed closely by Colorado; whilst Utah and Montana are likewise large lead-producing States. The total production of 270,700 short tons was slightly below that of the previous year.

Marble.—The value of the total output of marble in 1901 amounted to \$4,965,699; of this amount Vermont contributed \$2,753,583, or more than one-half.

Mineral Waters.—The output of all the mineral springs in the United States amounted to 55,771,188 gallons, valued at \$7,586,962, which is an increase of over 8 million gallons in quantity and $1\frac{1}{2}$ million dollars in value compared with 1900. The leading States in 1901 were Massachusetts and Michigan, with a production of over 7 million gallons each. Next comes Texas and Ohio, while New York and Wisconsin were also large producers.

Natural Gas.—The value of the natural gas obtained from boreholes was in 1901 nearly 6 millions sterling, which amount represents a production of 180,450,000,000 cubic feet. At the close of the year there were 11,297 wells producing natural gas.

Petroleum.—The yield of the oil-wells of the United States almost equals that of all the rest of the world put together. In 1901 the production was 69,389,194 barrels of 42 gallons, or nearly 3 million barrels more than the previous year.

The principal oil-producing States are Ohio, West Virginia, Pennsylvania, California, Indiana, Texas, and New York.

Phosphate of Lime.—The three great phosphate States are Florida, South Carolina, and Tennessee, with a production in 1901 of 751,996, 321,181 and 409,653 tons respectively.

Quicksilver.—With the exception of small quantities from Texas and Oregon all the quicksilver comes from California.

Salt.—Previous to 1893 Michigan was the chief salt-producing State; in that year New York assumed the lead and maintained it until 1901, when Michigan again resumed the supremacy with a production of 7,729,641 barrels against 7,286,320 barrels obtained by New York. The total production of the whole country amounted to almost 20,566,661 barrels.

Silver.—The silver yield for 1901 amounted to 55,214,000 ozs., which was 2,433,000 ozs. less than in 1900. The production of Colorado, owing to the decline in the grade of ores extracted, fell off by 2,046,100 ozs.; and Montana, Idaho, and South Dakota diminished their output by 1,063,700, 886,200, and 458,200 ozs. respectively.

Zinc.—The maximum production of zinc in the United States was reached in 1901 by the output of 140,822 short tons; Arkansas, Kansas, Illinois, Missouri, New Jersey, and Wisconsin are the principal producing States.

It is beyond the province of this Report to enter into minute details concerning each individual State; but a few facts relating to those in which mining is one of the important industries may with propriety be inserted from time to time.

ILLINOIS.*

This State comes second among the coal-producing States, though a very long way behind Pennsylvania. The output of Illinois in 1901 was 26,635,319 short tons, or an increase of about $1\frac{1}{2}$ million tons compared with 1900.

The death-rate from accidents in 1901 was 2·2 per 1,000 persons employed: more than 57 per cent. of the deaths were caused by falls of ground. The average death-rate for the 19 years 1883–1901 is 2·1, or slightly less than last year's figure, whilst the output since 1883 has been more than doubled.

The amount of coal cut by machinery during the year was 5,774,639 tons, and 464 machines were employed.

PENNSYLVANIA.†

The most important mining State is Pennsylvania, which produced 80,914,236 short tons of bituminous coal in 1901, as against 79,318,362 in 1900, and 59,905,951 long tons of anthracite, as against 51,217,318. The total increase in the output for the year was 10,284,507 tons. The number of persons employed in and about mines of bituminous coal in 1901 was 117,062, and in and about anthracite mines 147,651. The death-rate per 1,000 persons employed in and about bituminous mines was 2·56, and in and about anthracite 3·47; and the death-rate from accidents underground per 1,000 persons employed underground in all coal mines was 3·78: about 50 per cent. of the total deaths at bituminous and anthracite mines were due to falls of ground.

* *Twentieth Annual Coal Report prepared by the Illinois Bureau of Labor Statistics, 1901, Springfield, Ill., 1902.*

† *Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania, 1901, Harrisburg, 1902.*

UNITED STATES—continued.

TABLE 509.

PERSONS EMPLOYED at COAL MINES in the various States during the Years 1900 and 1901.*

State	1900.		1901.	
	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.
Alabama...	13,967	601	17,370	524
Arkansas...	2,800	517	3,144	578
California...	378	454	428	353
Colorado...	7,459	703	8,870	643
Georgia...	597	529	766	448
Illinois...	20,101	659	41,880	653
Indiana...	11,720	553	12,968	534
Indian Territory...	4,525	425	6,706	361
Iowa...	11,606	448	12,653	444
Kansas...	8,459	528	9,928	494
Kentucky...	9,680	551	10,307	531
Maryland...	5,319	757	5,333	959
Michigan...	1,704	499	2,276	545
Missouri...	8,180	433	9,871	385
Montana...	2,376	699	2,158	647
New Mexico...	2,037	638	2,478	438
North Carolina...	84	211	25	480
North Dakota...	326	398	280	595
Ohio...	27,628	687	32,111	652
Oregon...	141	417	187	369
Pennsylvania	{ Anthracite 144,206 Bituminous 92,692	{ 398 861	{ 145,309 101,904	{ 464 808
Tennessee...	8,246	450	9,046	402
Texas...	2,844	340	3,051	363
Utah...	1,308	877	1,712	773
Virginia...	3,631	659	4,152	657
Washington...	3,670	674	4,545	567
West Virginia...	29,163	777	30,935	778
Wyoming...	5,332	753	5,151	871
Total for United States...	449,181	601	485,544	604

* Official Return furnished by the United States Geological Survey, Washington.

UNITED STATES—continued.

TABLE 510.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1900 and 1901.*

Product.	Customary Measures.	1900.			1901.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	† Metric Tons.		Customary Measures.	† Metric Tons.	
<i>Non-Metallic.</i>							
Asbestos	Short tons ..	1,054	956	\$ 16,310	747	678	13,498
Asphaltum	" ..	54,389	49,355	415,958	63,134	57,290	555,335
Barytes	" ..	67,680	61,416	188,089	49,070	44,528	157,844
Bauxite	Long tons ..	23,184	23,563	89,676	18,905	19,205	79,914
Borax { refined	Short tons ..	1,602	1,454	170,036	5,344	4,849	697,307
{ crude	" ..	24,235	21,992	848,215	17,887	16,231	314,811
Bromine	Pounds ..	521,444	237	140,790	552,043	250	154,573
Building stone	—	—	—	44,321,345	—	—	55,615,926
Cement	Bls., 300 lbs. ..	17,231,150	2,345,438	13,283,581	20,068,737	2,731,679	15,786,789
Chromic iron ore	Long tons ..	140	142	1,400	368	374	5,790
Clay (brick)	—	—	—	12,000,000	—	—	13,800,000
" (all other than brick) ..	—	—	—	1,840,377	—	—	2,576,932
Coal, anthracite;	Long tons ..	51,221,353	52,057,999	85,757,851	60,242,560	61,226,558	112,504,020
" bituminous	Short tons ..	212,314,912	192,683,260	220,913,513	225,826,849	204,924,545	236,406,449
Cobalt oxide	Pounds ..	6,471	3	11,648	13,360	6	24,048
Corundum and emery	Short tons ..	4,305	3,907	102,715	4,305	3,907	146,040
Feldspar	" ..	24,821	22,524	180,971	34,741	31,525	220,422
Fibrous talc	" ..	63,500	57,623	499,500	69,200	62,795	483,600
Flint	" ..	32,495	29,487	86,351	34,420	31,234	149,297
Fluorspar	" ..	18,450	16,742	94,500	19,586	17,773	113,803
Fuller's earth	" ..	9,698	8,804	67,535	14,112	12,806	96,835
Garnet (abrasive)	" ..	3,185	2,890	123,475	4,444	4,032	158,100
Graphite { Crystalline	Pounds ..	5,507,855	2,459	197,579	3,967,812	1,800,187	167,714
{ Amorphous	Long tons ..	611	821	809	809	822	822
Grindstones	—	—	—	710,026	—	—	580,703
Gypsum	Short tons ..	594,462	539,439	1,627,203	659,659	598,602	1,577,493
Infusorial earth and Tripoli ..	" ..	3,615	3,280	24,207	4,020	3,648	52,950
Limestone for iron flux	Long tons ..	7,495,435	7,617,865	3,687,394	8,540,168	8,679,663	4,659,836
Magnesite	Short tons ..	2,252	2,044	19,333	13,172	11,953	43,057
Manganese ore	Long tons ..	11,771	11,963	100,389	11,995	12,191	116,722
Marls	Short tons ..	60,000	54,431	30,000	99,880	90,635	124,880
Mica { Sheet	Pounds ..	456,283	207	92,758	360,060	163	98,859
{ Scrap	Long tons ..	5,497	5,587	55,202	2,165	2,200	19,719
Millstones	—	—	—	32,858	—	—	57,179
Mineral waters { Gallons sold	..	47,558,784	—	6,245,172	55,771,188	—	7,586,962
{ Litres ..	..	201,030,980	—	—	235,744,812	—	—
Monazite	Pounds ..	908,000	412	48,805	748,736	340	59,263
Natural gas	—	—	—	23,698,674	—	—	27,067,500
Oilstones	—	—	—	174,087	—	—	158,300
Paints, mineral	Short tons ..	72,222	65,537	881,363	61,460	55,771	789,962
Petroleum { Bls., 42 gals. ..	..	63,620,529	—	75,989,313	69,389,194	—	66,417,335
{ Litres ..	..	11,294,806,905	—	—	12,318,941,168	—	—
Phosphate rock	Long tons ..	1,491,216	1,515,573	5,359,248	1,483,723	1,507,958	5,316,403
Precious stones	—	—	—	233,170	—	—	289,050
Pyrites	Long tons ..	204,615	207,957	749,991	234,825	238,661	1,024,449
Rutile	Pounds ..	300	—	1,300	44,275	20	5,710
Salt	Bls., 280 lbs. ..	20,869,342	2,650,075	6,944,603	20,566,661	2,612,824	6,617,449
Soapstone	Short tons ..	27,943	25,357	383,541	28,643	25,992	424,888
Sulphur	" ..	3,525	3,199	88,100	7,990	6,978	223,430
Zinc, white	" ..	48,840	44,319	3,667,210	46,500	42,196	3,720,000
Total value of non-metals in \$ .. .. .	.. ..	—	—	512,195,262	—	—	567,261,144
Total value of non-metals in £ sterling. .. .. .	.. ..	—	—	£105,389,972	—	—	£116,729,400

* Official Return furnished by the United States Geological Survey, Washington.

† The United States Geological Survey Department calculates on 2,204 lbs. = 1 metric ton basis.

‡ Represents production from Pennsylvania only.

UNITED STATES—continued.

TABLE 510—continued

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1900 and 1901—continued.

Product.	Customary Measures.	1900.			1901.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Metallic.</i>				\$			\$
Aluminium	Pounds	7,150,000	3,244	1,920,000	7,150,000	3,244	2,238,000
Antimony	Short tons ..	4,226	3,835	837,896	2,649	2,404	542,029
Copper	Pounds	606,117,166	275,008	92,494,030	602,072,510	273,173	87,300,515
Gold (fine)	Troy ounces ..	3,829,897	—	79,171,000	3,805,500	—	78,686,700
	Kilos.	119,684	—	—	118,922	—	—
Iron, pig	Long tons ..	13,780,242	14,014,475	259,944,000	15,878,354	16,137,710	242,174,000
Lead	Short tons ..	270,824	245,767	53,581,688	270,700	245,644	23,380,200
Nickel	Pounds	9,715	4	3,888	8,700	3	3,551
Platinum	Troy ounces ..	400	—	2,500	1,408	—	27,528
	Kilos.	13	—	—	44	—	—
Quicksilver	Flasks 76½ lbs. ..	28,317	982	1,302,586	29,727	1,032	1,332,305
Silver (fine)	Troy ounces ..	57,847,000	—	74,533,405	55,214,000	—	71,387,800
	Kilos.	1,801,469	—	—	1,725,438	—	—
Zinc	Short tons ..	123,886	112,419	10,854,196	140,822	127,768	11,295,760
Total value of metals in \$ .. .. .	.. .. .	—	—	550,425,286	—	—	518,368,377
.. .. . £ sterling .. .. .	.. .. .	—	—	£113,252,116	—	—	£106,639,584
Estimated value of products unspecified. .. .. .	.. .. .	—	—	\$1,000,000	—	—	\$1,000,000
Total value in \$ .. .. .	.. .. .	—	—	1,063,620,548	—	—	1,086,599,521
.. .. . £ sterling .. .. .	.. .. .	—	—	£218,847,849	—	—	£223,565,745

The following tables give further details concerning the output of coal and iron ore:—

TABLE 511.

COMPARATIVE OUTPUT of COAL for the Years 1900 and 1901 in the principal COAL-PRODUCING STATES.*

State.	1900	1901.	Comparison with preceding Year.
	Metric Tons.	Metric Tons.	Metric Tons.
Illinois	23,491,224	24,163,172	+ 671,948
Ohio	17,332,146	17,623,571	+ 291,425
Pennsylvania { Anthracite	52,057,999	54,345,801	+ 2,287,802
	71,956,456	73,404,211	+ 1,447,755
West Virginia	20,442,568	20,616,613	+ 174,045
Other States	59,621,446	75,997,735	+ 16,376,289
Total	244,901,839	266,151,103	+ 21,249,264

* Compiled from the Reports of the various States.

UNITED STATES—continued.

TABLE 512.

PRODUCTION of IRON ORES.*

State.	Red Hematite.	Brown Hematite.	Magnetite.	Carbonate.	Total.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
Minnesota ...	11,290,999	—	—	—	11,290,999
Michigan ...	9,540,029	33,915	237,812	—	9,811,756
Alabama ...	2,104,240	743,255	—	—	2,847,495
Other States ...	1,462,869	2,288,820	1,604,879	52,507	5,409,075
Total for 1901 ...	24,398,137	3,065,990	1,842,691	52,507	29,359,325
„ 1900 ...	23,079,189	3,283,865	1,562,665	77,493	28,003,212

TABLE 513.

DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1900 and 1901.†

State.	1900.			1901.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Alabama ...	37	2.52	205,873	41	2.36	201,387
Arkansas ...	†	—	—	18	5.72	91,558
California ...	†	—	—	†	—	—
Colorado ...	29	3.99	171,919	55	6.20	98,637
Georgia ...	†	—	—	†	—	—
Illinois§ ...	94	2.39	242,758	99	2.24	244,141
Indiana ...	18	1.82	316,661	†	—	—
Indian Territory ...	40||	8.84	43,094	49	7.31	44,849
Iowa§ ...	29	2.22	160,080	27	2.05	182,895
Kansas ...	22	2.60	183,627	16	1.61	277,934
Kentucky ...	17	1.59	267,923	21	2.04	236,366
Maryland ...	7	1.33	521,738	12	2.25	386,655
Michigan ...	†	—	—	6	2.64	187,725
Missouri ...	10||	1.28	271,704	15	1.52	230,011
Montana ...	7	2.95	184,007	†	—	—
New Mexico§ ...	15	7.44	71,809	9	3.63	109,553
North Carolina ...	†	—	—	†	—	—
North Dakota ...	†	—	—	†	—	—
Ohio ...	68	2.15	253,392	72	2.15	256,116
Pennsylvania {	Anthracite ...	411	2.86	513	3.47	118,683
	Bituminous ...	265	2.43	301	2.56	243,937

* Return furnished by the United States Geological Survey, Washington.

† Compiled from the *Mineral Resources of the United States, Calendar Year 1901*, United States Geological Survey, Washington, 1902, the Reports of Inspectors of Mines for the various States, and *Eng. Min. Jour.*, Vol. LXXII., 1901, p. 166.

‡ No report.

§ For Fiscal Years ended June 1900 and 1901.

|| " " year " June 1900.

UNITED STATES—*continued.*DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1900 and 1901—*continued.*

State.	1900.			1901.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Tennessee ...	10	1.15	354,169	44	4.86	74,932
Texas ...	*	—	—	*	—	—
Utah ...	209	138.96	5,356	9	5.26	133,355
Virginia ...	*	—	—	*	—	—
Washington ...	33	7.79	66,473	27	5.94	86,651
West Virginia†	141	5.03	136,099	130	4.47	158,634
Wyoming ...	24	4.50	151,198	41	7.96	99,273
Total and average for States for which figures have been received.	1,486‡	3.29	160,805	1,505§	3.12	166,464

A disastrous fire of a somewhat unusual nature occurred at the Smuggler Union Mine|| in the Upper San Miguel District, Colorado, on the 20th November, 1901. A large timber structure at the mouth of an adit level took fire accidentally, and the smoke was drawn into the mine in such quantity and with such rapidity that 23 men were suffocated before they could escape.

In February, 1901, a fire took place in a colliery at Diamondville, Wyoming,¶ and 26 miners were suffocated by the smoke. It is believed that some brattice cloth was ignited by an open lamp and that the fire quickly spread to some dry boards and timber close by. The heavy death-roll is apparently in part due to the Babel of tongues of the underground workmen, made up of Americans, Welsh, Italians, Hungarians, and Finns. Some of the three latter nationalities could not speak English, and when called upon to escape did not seem to understand the order given them.

Complete statistics concerning the fatalities at ore mines are lacking.

There were 24 deaths from accidents,** equivalent to 3.62 per 1,000 persons employed, at the iron mines of Marquette County (Michigan) during the year ended 30th September 1900, and 33 deaths from accidents,†† equivalent to 2.44 per 1,000 persons employed, at the Lake Superior copper mines during the year ended 30th September 1901.

The death-rates of the persons employed underground at the metalliferous mines of Colorado‡‡ during the seven years 1896 to 1902 have been as follows:—5.966, 5.876, 5.458, 3.743, 3.823, 4.919, and 3.274. All these mortality rates are high.

United States Possessions.—(See CUBA, PHILIPPINE ISLANDS, AND PORTO RICO.)

* No report.

† For Fiscal Year ended June 1900 and 1901.

‡ Excluding Arkansas, California, Georgia, Michigan, North Carolina, North Dakota, Texas, and Virginia.

§ Excluding California, Georgia, Indiana, Montana, North Carolina, North Dakota, Texas, and Virginia.

|| *Mines and Minerals*, Vol. xxii., 1902, p. 271.

¶ Vol. xxi., Scranton, Pa., 1901, p. 388.

** *Annual Report of the Inspector of Mines for Year ending 30th September 1900.* Ishpeming, 1900.

†† *Report of the State Bureau of Mines for the Years 1901-2.* Denver, 1903. p. 250.

‡‡ *Report of the State Bureau of Mines for the Years 1901-2.* Denver, 1903. p. 250.

Uruguay.

The number of persons employed at mines and quarries in the Republic of Uruguay is unknown. Auriferous quartz appears to be the principal mineral worked; as the quantity of gold obtained in 1901 was only 72 kilos, the number employed in mining is not likely to be large.

TABLE 514.

QUANTITY and VALUE of GOLD produced in 1900 and 1901.*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
Gold	Kilos. 71†	£ 6,669	Kilos. 72†	£ 6,735

Venezuela.†

According to official statements the country abounds in asphalt, coal, petroleum, salt, and sulphur, as well as in the ores of copper, gold, iron, lead, silver, and tin; but these rich mineral resources are almost entirely neglected.

Asphalt.—The quantity exported from Maracaibo in 1899 was 79 tons, but in 1900 and 1901 it is not reported.

Gold.—The gold mining industry does not make much progress. The precious metal is obtained mainly from quartz veins in the Caratal or Yuruari district.

Iron.—The deposits of iron ore at Imataca, on the Lower Orinoco, are not yet being worked.

Salt is a Government monopoly; the net amount of revenue from this source in 1901 was 2,827,576 bolivares, or £111,984.

TABLE 515.

QUANTITY and VALUE of GOLD exported from Ciudad Bolivar in 1900 and 1901.

1900.		1901.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 600	£ 63,904	Kilos. 842	£ 89,151

* Return furnished by the "Departamento Nacional de Ingenieros. Seccion Industrial y de Minas," Montevideo.

† Fine Gold 70%, Fine Silver 30%.

† Acting Consul Andral, "Trade of Caracas and District for the Year 1899." *Dipl. and Cons. Reports*. Nos. 2,466, 1900 [Cd. 1-103], and Consul de Lemos "Trade of Ciudad Bolivar for the Year 1901." *Dipl. and Cons. Reports*. No. 2,772 Ann. Ser., 1902 [Cd. 786-76].

					Page.
ABERDEEN,	Clay	150, 166
"	Gravel and sand	150, 201
"	Igneous rocks	150, 204
"	Limestone	151, 242
"	Sandstone	151, 256
"	Slate	151, 260
"	Persons employed	64, 151
Abyssinia,	Mineral Output	289, 347
Accidents, Fatal, at Mines in the United Kingdom					7, 65-91,
					290, 291, 295
"	"	Mines under the Coal Mines Act	9, 22, 23, 40
"	"	Mines under the Metalliferous Mines Act	9, 24, 25, 41
"	"	Quarries under the Quarries Act	9, 26, 27, 290, 291, 295
"	"	in the several Coal-fields	86-89
"	"	at Coal Mines	70
"	"	Boiler explosions	22, 23, 84, 85, 88, 89		
"	"	Descent or ascent	22-25, 78, 88, 89		
"	"	Explosions of Fire-damp or Coal-dust	22, 23, 40, 41, 71-75, 88, 89		
"	"	Explosives	22-25, 79-81, 88, 89		
"	"	Falls of ground	22-25, 40, 41, 71, 76, 77, 88, 89		
"	"	Haulage	22, 23, 79, 82, 83		
"	"	Inclined or engine planes	22, 23, 79, 88, 89		
"	"	in the several Inspection districts	22-25		
"	"	at Iron Mines	70
"	"	Irruptions of water	22, 23, 79, 82, 88, 89		
"	"	Miscellaneous underground	22-25, 40, 41, 71, 79-83, 88, 89		
"	"	" on surface	22-25, 86		
"	"	Machinery	22-25, 79, 83, 84, 88, 89		
"	"	at "other Mines" than Coal and Iron	70		
"	"	Overwinding	22, 23, 77, 78, 88, 89		
"	"	Railways, sidings, &c.	22-25, 85, 86, 88, 89		
"	"	Ropes and chains breaking	22, 23, 78, 79, 88, 89		
"	"	Shafts	22-25, 40, 41, 71, 77, 78, 88, 89		
"	"	Shot-firing	73
"	"	Suffocation by natural gases	22, 23, 79, 81, 88, 89		
"	"	Surface	22-25, 40, 41, 71, 84-86, 88, 89		
"	"	Trams and tube	22, 23, 79, 88, 89		
"	"	Underground fires	22, 23, 79, 81, 82, 88, 89		
"	"	" haulage	22, 23, 79, 82, 83, 88, 89		
"	"	Ashton Moss Colliery	82
"	"	Blaendare Slope Colliery	73, 74
"	"	Donibristle Colliery	83
"	"	Hill of Beath Colliery	81, 82
"	"	Llanbradach Colliery	73, 74
"	"	Talk-o'-th'-Hill Colliery	73, 74
"	"	Universal Colliery	66, 73, 74
"	"	at Mines in :			
		Algeria	290, 349
		Australia	290, 298
		Austria	290, 355, 358
		Belgium	290, 366
		Bohemia	358
		Bosnia and Herzegovina	290, 361

Accidents, Fatal, at Mines in—*cont.*

	British Columbia...	290, 316, 317
	British Guiana	290, 312
	Cape Colony (Kimberley Dia- mond Mines)	290, 322, 323
	Ceylon	290, 325
	Federated Malay States...	290, 328
	France	290, 384
	German Empire	290, 392, 393
	Gold Coast	329
	Greece	290, 404
	Holland	290, 406
	Hungary	290, 360
	India	290, 335, 336
	Italy	290, 411, 412
	Japan	290, 414
	Kimberley...	290, 322, 323
	Mexico	290, 416
	Natal	290, 337
	Newfoundland	290, 338
	New South Wales	290, 300
	New Zealand	290, 340
	Nova Scotia	290, 318
	Ontario	290, 319
	Portugal	290, 428
	Prussia	398-401
	Quebec	290, 319
	Queensland	290, 303
	Russia	429
	Saxony	402
	Servia	290, 431
	Spain	290, 434, 435
	Sweden	290, 437
	Switzerland	290, 440
	Tasmania	290, 305
	Transvaal	290, 344
	United States	290, 449, 450
	Victoria	290, 307
	Western Australia	290, 308
"	" Union Colliery, British Columbia	317
"	" Wellington (Extension) Mine, Columbia	317
"	" New Campbell Colliery, Natal	357
"	" Frischglück Colliery, Austria	357
"	" Pluto Colliery Wiesa, Austria	357
"	" Prussian Collieries	400
"	" San Andres Silver Mine, Mexico	416
"	" Besshi Ikikoku (Japan)	414
"	" Smuggler Union Mine (Colorado)	450
"	" Diamondville Mine (Wyoming)	450
"	" at Quarries :	
"	" in United Kingdom	7, 26, 27, 91-101
"	" from Blasting	26, 27, 94, 96-98
"	" Boiler explosions	95, 99, 100
"	" at different kinds of Quarries	93, 94
"	" during descent and ascent	26, 27, 95, 96, 99
"	" Explosives... ..	26, 27, 97, 98
"	" Falling from paths, steps, or ladders	26, 27, 95, 99
"	" " ledges	26, 27, 95, 99
"	" Falls of ground	26, 27, 94, 96, 97
"	" Inclined and engine planes	26, 27, 95, 99, 101
"	" in the several Inspection districts	26, 27
"	" Machinery... ..	26, 27, 95, 99, 101
"	" Miscellaneous, inside and outside	26, 27, 95, 96, 99, 101

	Page.		Page.
Accidents, Fatal, at Quarries—cont.		Antimony or Antimony ore, Output of:	
" " Railways, tramways, &c.	26, 27, 95, 99-101	United Kingdom ...	155
" " Ropes or chains breaking	26, 27, 95, 99	Algeria ...	243
" " at Quarries in:		Australia... ..	297
Algeria ...	290, 349	Austria ...	353
Belgium ...	290, 355	Bolivia ...	307
Ceylon ...	290, 335	British Borneo ...	319
France ...	290, 385	Chili ...	371
German Empire ...	290, 394	France ...	383
India ...	385	Hungary ...	399
Italy ...	290, 412	Italy ...	411
Portugal ...	290, 423	Japan ...	413
Switzerland ...	290, 440	Mexico ...	415
" " at Petroleum Workings:		New South Wales ...	399
Austria ...	355, 357	New Zealand ...	349
" Non-fatal, at Mines ...	28-31	Portugal ...	433
" " Quarries ...	33, 33	Sarawak ...	319
Actinolite, Output of Canada ...	315	Servia ...	431
" " Ontario ...	318	Spain ...	433
Acts of Parliament relating to Mines and Quarries ...	5, 110	Turkey ...	441
Aden, Output of Salt ...	289, 296	United States ...	443
Alabama, Accidents ...	449	Antrim Co., Bauxite... ..	153, 163
" Persons employed ...	446	" Chert and flint... ..	153, 163
" Coal-cutting machines ...	444	" Clay ...	153, 167
Algeria, Accidents ...	290, 349	" Coal ...	153, 171, 174
" Mineral output ...	289, 348	" Igneous rocks ...	153, 204
" Persons employed ...	288, 347	" Iron ore ...	153, 207, 209, 211
Alum, Output of:		" Limestone ...	153, 242
German Empire... ..	390	" Salt ...	153, 253
India ...	331	" Sandstone ...	153, 257
Prussia ...	398	" Persons employed ...	56, 58, 61, 65, 153
Sweden ...	437	Apatite, Output of Norway ...	418
Alum clay (see Bauxite).		Appeals ...	108
Alumina, Production of United Kingdom ...	139	Arabia, Mining in ...	349
Aluminium, Makers in United Kingdom ...	163	Argentina Republic, Mineral output ...	349
" Output of United Kingdom ...	139, 295	Argyll, Coal ...	150, 171, 174
" " United States ...	448	" Igneous rocks ...	150, 204
" sulphate, Output of German Empire ...	390	" Limestone ...	151, 242
" " Prussia ...	398	" Sandstone ...	151, 256
Aluminous earths, Output of France ...	333	" Slate ...	151, 269
" " Spain ...	433	" Persons employed ...	55, 61, 64
" hematite, Production of Ireland ...	211	Arkansas, Accidents... ..	449
Alum shale, Output of United Kingdom 10, 38, 129, 154, 294		" Persons employed ...	446
" " Austria ...	353	" Coal-cutting machines ...	444
" stone, Output of Italy ...	411	Armagh Co., Gravel and sand ...	152, 203
Alunite, Output of Australia ...	297	" Igneous rocks ...	152, 204
" " New South Wales ...	299	" Limestone ...	153, 242
Amber, Output of India ...	331	" Persons employed in Quarries ...	65, 153
Amblygonite, Output of France ...	383	Arsenic or Arsenic ore, Output of:	
Amethyst, Output of France ...	383	United Kingdom ...	10, 38, 129, 157, 158, 294
Ammonite, Accidents with... ..	80, 98	Canada ...	315
Amvis, Accidents with ...	80	France ...	383
Anglesey, Copper ore and precipitate ...	150, 189, 190	German Empire... ..	389
" Gravel and sand ...	150, 201	Japan ...	413
" Igneous rocks ...	150, 203	Ontario ...	318
" Lead ore ...	151, 230, 232	Portugal ...	423
" Limestone ...	151, 241	Prussia ...	397
" Ochre ...	151, 245, 246	Turkey ...	441
" Sandstone ...	151, 256	Arsenic refiners ...	158, 159
" Silver ...	230, 232	Arsenical pyrites, Output of:	
" Zinc ore ...	151, 273, 274	United Kingdom ...	10, 38, 129, 156, 157, 294
" Copper smelters ...	196	Italy ...	411
" Persons employed ...	61, 64, 151	Saxony ...	402
Ankylostomiasis, Cases in Prussia ...	401	Spain ...	433
Annam, Mineral output ...	407	Aruba, Mineral Output ...	379
Anthracite, Output of:		Asbestos, Output of:	
United Kingdom ...	172	Australia... ..	297
France ...	383	Canada ...	315
Italy ...	411	Cape Colony ...	321
Portugal ...	423	France ...	384
Russia ...	428	India ...	331
Spain ...	433	Quebec ...	319
United States ...	447	Russia ...	423
Antimony, Price in London ...	155	Tasmania... ..	305
" Smelters and refiners ...	155		

	Page.		Page.
Asbestos, Output of—cont.		Bauxite, Output of :	
United States	447	United Kingdom	10, 38, 129, 162, 294
Ashton Moss Colliery, Underground fire...	82	France	383
Asphalt, Output of :		United States	447
Austria	353	Bavaria, Mineral output	395, 396
German Empire... ..	389	" Persons employed	395
Hungary	359	Bechuanaland Protectorate, Minerals	310
Italy	411	Bedfordshire, Chalk... ..	148, 164
Mexico	415	" Clay	148, 166
Prussia	397	" Gravel and sand	148, 201
Russia	428	" Limestone	149, 241
Spain	433	" Phosphate of lime	149, 249
Trinidad	345	" Sandstone	149, 256
Turkey	441	" Persons employed	60, 63, 149
United States	447	Belfast and County Down Railway, Coal and Coke traffic	180
Venezuela	451	Belfast and Northern Counties Railway, Coal and Coke traffic	180
Atkinson, W. N. Remarks on the Talk-o'-th'-Hill Colliery Explosion...	74	Belgium, Accidents	290, 366
" " Remarks on methods of Haulage	83	" Mineral output	289, 365
Australia, Accidents	290, 291, 298	" Persons employed	288, 363
" Mineral Output... ..	289, 297	" Decline of female labour at Mines	363
" Persons Employed	288, 296	Bellite, Accidents with	80
Austria, Accidents	290, 355-358	Berkshire, Chalk	148, 164
" Mineral output	289, 353, 354	" Chert and flint	148, 165
" Persons employed	288, 351-353	" Clay	148, 166
Ayrshire, Clay	150, 166	" Gravel and sand	148, 201
" Coal	150, 171, 174	" Limestone	149, 241
" Gravel and sand	150, 201	" Sandstone	149, 256
" Igneous rocks	150, 204	" Persons employed	60, 63, 149
" Iron ore	150, 207, 208	Berwick, Igneous rocks	150, 204
" Limestone... ..	151, 242	" Sandstone	151, 256
" Oil shale	151, 247	" Persons employed	64, 151
" Sandstone	151, 256	Billiton, Output of Tin	376
" Blast furnaces	216, 222	" Persons employed	376
" Coal conveyed by rail	179	Birmingham Canal Navigation's Coal and Coke traffic...	181
" Death rate from accidents	90	Bismuth or Bismuth ore, Output of :	
" Persons employed	55, 58, 61, 64, 90, 151	Australia	297
		Austria	353
		Bolivia	367
		German Empire	389
		Hungary... ..	359
		New South Wales	299
		Queensland	302
		Saxony	402
		Bituminous shale, Output of :	
		France	383
		Italy	411
		Black tin (see Tin ore).	
		Blaendare Slope Colliery Explosion	73, 74
		Blasting, Fatal accidents in Quarries	26, 27, 94, 96-98
		Blast furnaces, Particulars of	218-223
		" in operation from 1873 to 1901... ..	223
		Blasting gelatine, Accidents with	80
		Blasting gelatine and gunpowder, Accidents with	98
		Bluestone, Output of Australia	297
		" Queensland	302
		Bog ore, Output of Ireland	10, 20, 21, 129, 131, 163, 294
		Bohemia, Accidents	358
		" Persons employed	358
		Boiler explosions at Mines... ..	22, 23, 28-31, 84, 85, 88, 89
		" Quarries	26, 27, 95, 99, 100
		Bolivia, Mineral output	289, 367
		Bonaire, Salt workings	379
		Boracite, Output of :	
		German Empire	389
		Prussia	397
		Turkey	441
		Borate of calcium, Output of Bolivia	367
		" " " Chili	371
		Borax, Output of :	
		Bolivia	367
		Chili	371
		Peru	420
		United States	447

B.

BAHAMAS, Output of Salt	289, 309
" Persons employed	288, 309
Bain, R. D. Remarks on Haulage Accidents	83
Banca, Output of Tin	376
" Persons employed	376
Banff, Gravel and sand	150, 201
" Igneous rocks... ..	150, 204
" Limestone	151, 242
" Sandstone	151, 256
" Persons employed	64, 151
Barbados, Minerals obtained in	309
Barytes, Output of :	
United Kingdom	10, 38, 129, 159-161, 294
Bavaria	395
Belgium	365
Canada	315
France	383
Nova Scotia	317
Quebec	319
Saxony	402
Spain	433
United States	447
Basalt, diorite, &c. (see also Igneous rocks), Output of	
Bavaria	395
Basic iron produced in United Kingdom... ..	217
Basutoland, Minerals	309

	Page.
Boric acid, Output of Italy	411
Borneo (Dutch), Mineral output	376, 377
" (see also British North Borneo).	
Bosnia and Herzegovina, Accidents	290, 361
" " Mineral output	289, 361
" " Persons employed	288, 361
Brazil, Mineral output	289, 368
Breconshire, Coal	150, 171, 172, 174
" Gravel and sand	150, 201
" Iron ore	150, 207, 208
" Limestone	151, 241
" Sandstone	151, 256
" Slate	151, 260
" Death rate from accidents	90
" Persons employed	55, 61, 64, 90, 151
Bridgewater Canals, Coal traffic	181
Briquettes, Production of, in Hungary	359
British Borneo, Output of Minerals	289, 310
British Central Africa Protectorate, Gold	311
British Columbia, Accidents	290, 291, 316, 317
" Mineral output	316
" Persons employed	316
British Guiana, Accidents	290, 312
" Mineral output	289, 311, 312
" Persons employed	288, 311
British New Guinea, Mineral output	289, 312
" " Persons employed	288
British Solomon Islands, Copper	313
Broken Hill Lead Mines (New South Wales), Cases of lead poisoning	300
Bromine, Production of the United States	447
Brown coal or Lignite, Output of :	
United Kingdom	240
Algeria	348
Austria	353
Bavaria	395
Bosnia and Herzegovina	361
Bulgaria	369
France	383
German Empire... ..	389, 391
Greece	404
Hungary... ..	359
Italy	411
New Zealand	340
Prussia	397
Roumania	425
Russia	428
Saxony	402
Servia	431
Spain	433
Victoria	306
Brown iron ore, Output of :	
United Kingdom	210
United States	449
Buckinghamshire, Chalk	148, 164
" Clay	148, 166
" Gravel and sand	148, 201
" Limestone	149, 241
" Persons employed	60, 63, 149
Bulgaria, Mineral output	289, 369
" Persons employed	288, 369
Burnt cupreous pyrites treated at Metal Extraction Works	
" " Metals extracted from	228
Bute, Gravel and sand	150, 201
" Igneous rocks	150, 204
" Sandstone	151, 256
" Persons employed	64, 151

C.

	Perc.
CAITHNESS, Sandstone	151, 256
" Slate	151, 260
" Persons employed	64, 151
Caledonian Canal, Coal and coke carried	182
" Railway " " " " " "	179
" Cabook," Output of Ceylon	324
Calcium carbide, Output of Ontario	318
Calo spar, Output of United Kingdom	17, 241, 242
Cambridgeshire, Chalk	148, 164
" Clay	148, 166
" Gravel and sand... ..	148, 203
" Limestone	149, 241
" Phosphate of lime	149, 249
" Persons employed	63, 149
Cameroons, Salt springs	369
Canada, Accidents	290, 291, 316-319
" Mineral output	289, 315
" Persons employed	288, 316-319
" (<i>see also</i> British Columbia, Nova Scotia, and Ontario).	
Canal, Coal and coke traffic	181, 182
Canary Islands, Minerals worked... ..	370
Cape Colony, Accidents	290, 322, 323
" Mineral output	289, 321
" Persons employed	288, 320
Carbo-gelatine, Accidents with	74, 80
Carbonite, Accidents with	80
Cardigan, Clay	150, 166
" Copper ore	150, 189, 190
" Gravel and sand	150, 201
" Lead ore	151, 230, 232
" Sandstone	151, 256
" Silver	230, 232
" Slate	151, 260
" Zinc ore	151, 273, 274
" Persons employed	61, 64, 151
Carlów Co., Igneous rocks	152, 204
" Limestone	153, 242
" Persons employed	65, 153
Carmarthenshire, Chert and flint	150, 165
" Clay	150, 166
" Coal	150, 171, 172, 174
" Gravel and sand	150, 201
" Lead ore... ..	151, 230, 232
" Limestone	151, 241
" Sandstone	151, 256
" Silver	230, 232
" Slate	151, 260
" Blast furnaces	216, 222
" Copper smelters	196
" Death rate from accidents	90
" Persons employed	55, 61, 64, 90, 151
Carnarvonshire, Clay	150, 166
" Copper ore	150, 189, 190
" Gravel and sand... ..	150, 201
" Igneous rocks	150, 203
" Iron ore	150, 207, 209, 211
" Lead ore	151, 230, 232
" Limestone... ..	151, 241
" Manganese ore	151, 248
" Sandstone	151, 256
" Silver	230, 232
" Slate	151, 260, 261
" Zinc ore	151, 273, 274
" Persons employed	58, 61, 64, 151
Cavan Co., Limestone	153, 242
" Persons employed	65, 153
Celebes, Gold... ..	377
Celestine (<i>see</i> Strontium sulphate).	

	Page.		Page.
Cement, Output of :		Clay, Production of— <i>cont.</i>	
Bavaria	395	France	383
Canada	315	India	331
France	383	Russia	428
Ontario	318	Spain	433
Quebec	319	Tunis	441
Switzerland	439	United States	447
United States	447	Victoria	306
Certificates of competency, List of persons to whom granted in 1901	113-121	" Exports from United Kingdom	168, 169
Certificates of Service, do., do.	122	" Quarries, Fatal accidents	93, 94
Ceylon, Accidents	290, 325	" " Persons employed	62
" Mineral output	289, 324	Cleveland iron ore, Output of	205, 206
" Persons employed	288, 324	Coal, Output of United Kingdom ... 10, 38, 129, 170, 175, 289, 294	
Chalk, Output of United Kingdom ... 10, 38, 129, 164, 294		" " in each Coal-field	172, 173
" " Belgium	365	" " " County ... 132, 134, 148, 150, 152, 170, 171, 174	
" " Denmark	375	" Output of :	
" " France	383	Algeria	289, 348
Chalk Quarries, Fatal accidents	93, 94	Annam	407
" " Persons employed	62	Australia	289, 297
Channel Islands, Persons employed	288, 325	Austria	289, 353
" Quantity of Stone exported	325	Bavaria	395
Chert and flint, Output of United Kingdom ... 10, 38, 129, 165, 294		Belgium	289, 365
Cheshire, Clay	148, 166	Bosnia and Herzegovina	289, 361
" Coal	148, 170, 174	British Columbia	316
" Gravel and sand	148, 201	British Borneo	289, 310
" Limestone	149, 241	Bulgaria	289, 369
" Salt	149, 253	Canada	289, 315
" Sandstone	149, 256	Cape Colony	289, 321
" Coal conveyed by rail	178, 179	Chili	289, 371
" Copper smelters	196	Dutch Borneo	376
" Death rate from accidents	91	Dutch East Indies	289, 376-378
" Persons employed	55, 60, 63, 91, 149	France	289, 383
" Zinc smelters	278	German Empire	289, 389, 391
Cheshire Lines Railway, Salt conveyed	254	Holland	289, 406
Chili, Mineral output	289, 371, 372	Hungary	289, 359
" Persons employed	288, 370	Illinois	448
China, Mineral wealth	289, 373	India	289, 331
China clay and stone conveyed by rail and sea ... 167, 168		Indo-China	289, 407
" Output of Cornwall and Devon	19, 166	Italy	289, 411
" " Belgium	365	Japan	289, 413
" " France	383	Java	377
" " Russia	428	Mexico	289, 415
" " Spain	433	Natal	289, 337
Christmas Island, Phosphate of lime	325	New South Wales	299
Chrome iron, Production in United Kingdom	217	New Zealand	289, 340
Chromic iron ore, Output of :		Nova Scotia	317
Australia	297	Ohio	448
Bosnia and Herzegovina	361	Pennsylvania	448
Canada	315	Peru	289, 420
Greece	404	Portugal	289, 423
New Caledonia	417	Prussia	397
New South Wales	299	Queensland	302
New Zealand	340	Rhodesia	342
Norway	418	Roumania	289, 425
Quebec	319	Russia	289, 428
Russia	428	Sarawak	310
Servia	431	Saxony	402
Turkey	442	Servia	289, 431
United States	447	Spain	289, 433
Clackmannan, Clay	150, 166	Sumatra	378
" Coal	150, 171, 174	Sweden	289, 437
" Igneous rocks	150, 204	Tasmania	305
" Sandstone	151, 253	Tong-King	407
" Persons employed	55, 64, 151	Transvaal	289, 343
Clare Co., Gravel and sand	152, 202	Turkey	289, 442
" Igneous rocks	152, 204	United States	289, 447
" Sandstone	153, 257	Victoria	306
" Persons employed	65, 153	Western Australia	308
Clay, Output of United Kingdom ... 10, 38, 129, 166, 167, 294		West Virginia	448
" Production of :		" Output per person employed	173, 174
Algeria	348	" exported from United Kingdom	175, 186-188
Australia	297	" imported into " "	185
Belgium	365	" Average price in the several Coal-fields	173
		" " " in the several Counties	170, 171, 174

	Page.		Page.
Coal, Average Price in the London market ...	176, 177	Copper or Copper ore, Output of—cont.	
" " " at the Pit's mouth ...	170, 171, 173, 174	Canada ...	289, 315
" " " at the several Ports ...	177	Cape Colony ...	289, 321
" Quantity retained for home consumption ...	175	Chili ...	289, 371
" " " per head of population ...	175	Cyprus ...	289, 326
" shipped coastwise ...	183, 184, 188	France ...	289, 333
" " for use of steamers ...	175, 188	German Empire ...	289, 389
" and coke conveyed by railway, canal, &c. ...	178-182	Honduras ...	289, 407
" used in the blast furnaces of United Kingdom ...	216, 218-223	Hungary ...	289, 359
Coal-fields of United Kingdom, List of ...	52	India ...	289, 331
" Fatal accidents ...	86-89	Italy ...	289, 411
" Mineral output ...	172, 173	Japan ...	289, 413
" Persons employed ...	53, 54, 173	Mexico ...	289, 415
Coal-cutting Machines:		New Caledonia ...	289, 417
Number in use in the United Kingdom ...	107	Newfoundland ...	289, 338
" " " United States ...	444	New South Wales ...	289, 340
Quantity of Coal obtained in United Kingdom by use of ...	108	New Zealand ...	289, 418
Quantity of Coal obtained in United States by use of ...	443	Norway ...	289, 418
Coal-dust (see Accidents).		Nova Scotia ...	289, 317
Coal mines, definition ...	51	Ontario ...	289, 420
" Fatal accidents ...	70	Peru ...	289, 423
" Mineral output from ...	172, 173, 174	Portugal ...	289, 423
" Persons employed at ...	52, 53, 55, 56, 173, 174	Prussia ...	289, 397
" Regulation Act ...	5	Quebec ...	289, 319
Cobalt and Nickel ores, Output of:		Queensland ...	289, 302
United Kingdom ...	39, 188	Russia ...	289, 429
Australia ...	297	Servia ...	289, 431
Bolivia ...	367	South Australia ...	289, 304
Chili ...	371	Spain ...	289, 433
German Empire ...	389	Sweden ...	289, 437
Italy ...	411	Tasmania ...	289, 305
New Caledonia ...	417	Turkey ...	289, 442
New South Wales ...	299	United States ...	289, 448
Prussia ...	397	Western Australia ...	289, 308
Russia ...	429		
Saxony ...	402	Copper precipitate, Production of:	
United States ...	447	United Kingdom ...	10, 38, 129, 189-191, 294
Cochin China, Output of jet ...	407	Bolivia ...	367
Coke exported from United Kingdom ...	175, 186-188	Chili ...	371
" shipped coastwise ...	183, 188	Portugal ...	423
" Output of:		Coprolites (see Phosphate of lime)	249
Australia ...	297	" conveyed by railway ...	250
British Columbia ...	316	Coral, Production of Ceylon ...	334
Canada ...	315	Corea, Mineral wealth of ...	374
New South Wales ...	299	" Output of Gold ...	289, 374
Nova Scotia ...	317	" Persons employed ...	288, 374
Colombia, Mineral output ...	289, 374	Cork, Brandon and South Coast Railway coal and coke traffic ...	180
Colorado, Accidents ...	449	Cork Co., Barytes ...	152, 160, 161
" Persons employed ...	446	" Clay ...	152, 167
" Coal cutting machines ...	444	" Coal ...	152, 171, 174
Commonwealth of Australia (see Australia).		" Copper ore ...	152, 189, 190
Comparative tables, 1873-1901, Persons employed, Mineral output, Deaths from Accidents and Death Rates ...	36-43	" Gravel and sand ...	152, 202
Conglomerate, output of Belgium ...	365	" Limestone ...	153, 242
Congo Free State ...	374	" Ochre ...	153, 245
Copper exported ...	192-194	" Sandstone ...	153, 257
" extracted from Burnt Cupreous pyrites ...	196, 228	" Slate ...	153, 260
" imported ...	195, 196	" Persons employed ...	56, 61, 65, 153
" obtained from British ores ...	129, 189, 190, 196	Cornwall, Arsenic ...	149, 157
" " Foreign ores ...	196	" Arsenical pyrites ...	149, 156
" Price in the London market ...	191, 192	" Chert and flint ...	148, 165
" Smelters in United Kingdom ...	196, 197	" China clay and stone ...	148, 166
Copper or Copper ore, Output of:		" Clay ...	148, 166
United Kingdom ...	10, 38, 129, 189-191, 289, 294, 295	" Copper ore ...	148, 189, 190
Algeria ...	289, 348	" Gravel and sand ...	148, 201
Argentine Republic ...	289, 349	" Igneous rocks ...	148, 203
Australia ...	289, 297	" Limestone ...	149, 241
Austria ...	289, 353	" Mica ...	149, 244
Bolivia ...	289, 367	" Ochre ...	149, 245, 246
Bosnia and Herzegovina ...	289, 361	" Sandstone ...	149, 256
British Columbia ...	316	" Slate ...	149, 260, 261
		" Tin ore ...	149, 265-267
		" Uranium ore ...	149, 271
		" Wolfram ...	149, 272
		" Zinc ore ...	149, 273, 274
		" Arsenic refiners ...	158
		" Death-rate from accidents ...	90

	Page.
Cornwall, Tin smelters	271
" Persons employed	60, 63, 90, 149
Corundum, Output of :	
Canada	315
India	331
United States	447
Costa Rica, Output of Gold	289, 374
County summaries, Output of Mines under the Coal	
Mines Act	132-135
" Output of Mines under the Metalli-	
ferous Mines Act	136-139
" Output of Quarries	140-145
" Output of Shallow workings, Brine	
wells, &c.	146, 147
" Output of all Mines, Quarries, &c.	
... ..	148-153
" Persons employed in Coal Mines	55, 56
" " Iron Mines	57, 58
" " Other Mines	60, 61
" Persons employed under the Coal	
Mines Act	133, 135
" " employed under the Metalli-	
ferous Mines Act	137, 139
" " employed under the Quarries	
Act	141, 143, 145
" " employed under all three	
Acts	149, 151, 153
" Death-rates	90, 91
Crinan Canal coal and coke traffic	182
Crocidolite, Production of Cape Colony	321
Cryolite, Output of Greenland	375
Cuba, Mineral wealth	375
Cumberland, Barytes	148, 159, 160
Clay	148, 166
Coal	148, 170, 174
Gravel and sand	148, 201
Gypsum	148, 202
Igneous rocks	148, 203
Iron ore	148, 207-210
Lead ore	149, 230, 231
Limestone	149, 241
Sandstone	149, 256
Silver	230, 231
Slate	149, 260, 261
Zinc ore	149, 273, 274
Blast furnaces	216, 218
Coal conveyed by rail	178, 179
Death-rate from accidents	90
Persons employed	55, 57, 60, 63, 90, 149
Cupreous iron pyrites, Output of :	
Canada	315
Italy	411
Norway	418
Portugal	423
Saxony	402
Spain	433
Cupreous iron pyrites, imported	227
" " treated at the Metal Extraction	
Works	228
Curaçao, Minerals worked	379
Cyprus, Mineral output	289, 326

D.

DEATHS from Accidents at Mines in United Kingdom	7, 9, 23, 25, 40, 41, 65-91
" " at Quarries in United	
Kingdom	7, 9, 27
" " (see also under "Accidents").	
Death-rates in each inspection-district	34
" in the several Coal-fields	86, 87, 89
" in the principal Mining Counties	90, 91

	Page.
Death-rates in all Mines per 1000 persons employed	
from 1892-1901	67
" " " " 1873-1901	66
" " " " 1851-1901	111, 112
" per million tons of mineral raised	42, 68
" Mines under the Coal Mines Act 8, 34, 42, 68, 69	
" " Metalliferous Mines Act 8, 34, 43,	
68, 69	
" Quarries under the Quarries Act	8, 34, 92
" in different kinds of Quarries	93
" from different causes of accidents :	
at Coal Mines	34
at Quarries	34
" from accidents at Mines :	
United Kingdom	8, 34, 66, 67
Algeria	291, 349
Austria	291, 355, 356
Belgium	291, 366
Bohemia	291, 358
Bosnia and Herzegovina	291, 361
British Columbia	291, 317
British Guiana	291, 312
Cape Colony (Kimberley Diamond	
Mines)	291, 321, 322
Ceylon	291, 325
Federated Malay States	291, 328
France	291, 384, 385
German Empire	291, 392, 393
Gold Coast	291, 329
Greece	291, 404
Holland	291, 406
Hungary	291, 360
India	291, 335, 336
Italy	291, 411
Japan	291, 414
Kimberley	291, 321, 322
Mexico	291, 416
Natal	291, 337
Newfoundland	291, 338
New South Wales	291, 300
New Zealand	291, 340
Nova Scotia	291, 318
Ontario	291, 319
Portugal	291, 423
Prussia	399, 401
Quebec	291, 319
Queensland	291, 303
Russia	291, 429
Saxony	291, 402
Servia	291, 431
Spain	291, 434
Sweden	291, 437
Switzerland	291, 440
Tasmania	291, 305
Transvaal	291, 344
United States	291, 449, 450
Victoria	291, 307
Western Australia	291, 308
" from accidents at Petroleum Wells :	
Austria	355
" from accidents at Quarries :	
United Kingdom	8, 34, 92, 93
Algeria	291, 349
Belgium	291, 385
Ceylon	291, 325
France	291, 385
Germany	291, 394
Italy	291, 412
Portugal	291, 423
Switzerland	291, 440
Denmark, Mineral output	375
Denbighshire, Chert and flint	150, 165
Clay	150, 166
Coal	150, 171, 174
Gravel and sand	150, 201
Igneous rocks	150, 203

	Page.		Page.
Denbighshire, Lead ore	151, 230, 233	Diamonds, Output of—cont.	
" Limestone	151, 241	Brazil	368
" Sandstone	151, 256	Cape Colony	321
" Silver	230, 233	India	331
" Slate	151, 260, 261	New South Wales	299
" Zinc ore	151, 273, 275	Western Australia	308
" Blast furnaces	216, 222	District statistics of persons employed, Output and	
" Death-rate from accidents	90	accidents	11-34
" Persons employed	55, 61, 64, 90, 151	Districts, Mines inspection, List of	44, 45
" Zinc smelters	278	Dolcoath Mine, Remarks on yield of Tin	265
Derbyshire, Barytes	148, 159	Donegal Co., Bog ore	153
" Chert and flint... ..	148, 165	" Igneous rocks	152, 204
" Clay	148, 166	" Limestone	153, 242
" Coal	148, 170, 174	" Sandstone	153, 257
" Fluorspar	148, 198	" Persons employed	65, 153
" Gravel and sand	148, 201	Donibristle Colliery Disaster	83
" Gypsum... ..	148, 202	Dorsetshire, Chalk	148, 164
" Iron ore... ..	148, 207, 208	" Clay	148, 166
" Iron pyrites	148, 226	" Gravel and sand	148, 201
" Lead ore	149, 230, 231, 233	" Limestone	149, 241
" Limestone	149, 241	" Sandstone	149, 256
" Ochre	149, 245, 246	" Persons employed	60, 63, 149
" Sandstone	149, 256	Down Co., Gravel and sand	152, 202
" Zinc ore	149, 273, 274	" Igneous rocks	152, 204
" Blast furnaces	216, 218	" Limestone	153, 242
" Coal conveyed by rail... ..	178, 179	" Sandstone	153, 257
" Death-rate from accidents	90	" Persons employed	61, 65, 153
" Lead smelters	239	Dublin Co., Clay	152, 167
" Persons employed	55, 60, 63, 90, 149	" Gravel and sand	152, 202
Desilverizers in the United Kingdom	239, 240	" Igneous rocks	152, 204
Detonators, Accidents with	80	" Limestone	153, 242
Devonshire, Arsenic... ..	149, 157, 158	" Sandstone	153, 257
" Arsenical pyrites	149, 156	" Persons employed	65, 153
" Barytes	148, 159, 160	Dublin, Wicklow, and Wexford Railway Coal and Coke	
" Chert and flint	148, 165	traffic	180
" Clay	148, 166	Dumbarton, Clay	150, 166
" Copper ore	148, 189, 190	" Coal	150, 171, 174
" Gravel and sand	148, 201	" Gravel and sand	150, 201
" Igneous rocks	148, 203	" Igneous rocks	150, 204
" Iron ore	148, 207, 209, 210	" Iron ore	150, 207, 208
" Limestone	149, 241	" Limestone	151, 242
" Ochre	149, 245	" Sandstone	151, 256
" Sandstone	149, 256	" Slate	151, 260
" Slate	149, 260	" Death-rate from Accidents... ..	90
" Tin ore	149, 265, 266	" Persons employed	55, 58, 61, 64, 90, 151
" Arsenic refiners	159	Dumfries, Clay	150, 166
" Persons employed	57, 60, 63, 149	" Coal	150, 171, 174
Diagram, Number of Persons employed and Number of		" Igneous rocks	150, 204
Deaths from Accidents from all causes at		" Lead ore	151, 230, 233
Mines, 1851-1901	66	" Limestone	151, 242
" Annual Death-rates from various causes of		" Sandstone	151, 256
Accidents per 1,000 persons employed at		" Silver	230, 233
Mines, 1873-1901	66	" Zinc ore	151, 273, 275
" Deaths per 1,000,000 tons of mineral raised,		" Persons employed	55, 61, 64, 151
1873-1901	68	Dundalk, Newry, and Greenore Railway Coal and Coke	
" Death-rates from Accidents per 1,000 persons		traffic	180
employed underground and aboveground at		Durham, Barytes	148, 159, 160
all Mines, 1873-1901	68	" Clay	148, 166
" Death-rates from Accidents underground,		" Coal	148, 170, 174
1873-1901	69	" Fluor spar	148, 198
" Proportion of deaths from different classes		" Gravel and sand	148, 201
of Accidents, 1901	71	" Igneous rocks	148, 203
" Death-rates from Accidents from falls of		" Iron ore	148, 207, 209, 210
ground, 1873-1901	77	" Lead ore	149, 230, 231
" Death-rates from Shaft Accidents, 1873-1901		" Limestone	149, 241
Accidents, 1873-1901	83	" Salt... ..	149, 253
" Death-rates of Men and Boys employed at		" Sandstone	149, 256
Mines	109	" Silver	230, 231
" Death-rates from Accidents at Quarries and at		" Blast furnaces	216, 218
Mines, 1896-1901	92	" Coal conveyed by rail	178, 179
" Output and Export of Coal, 1873-1901	169	" Copper smelters	197
" Output and Import of Iron ore, 1873-1901	206	" Death-rate from Accidents	90
" Prices of Coal, Copper, Iron, Lead, Tin, and		" Lead smelters	239
Zinc, 1873-1901	278	" Persons employed	55, 57, 60, 63, 90, 149
Diamonds, Output of :		Dust, Danger of	110
Australia... ..	289, 297		
Borneo, Dutch	377		

	Page.
Dutch East Indies, Mineral output ...	289, 376-378
" " " Persons employed ...	288, 376, 378
" Guiana, Output of Gold ...	289, 378
" West Indies, Mineral output ...	289, 379
Dynamite, Accidents with ...	80, 98

E.

ECUADOR, Output of Gold and Silver ...	289, 379
Edinburghshire, Clay ...	150, 166
" Coal ...	150, 171, 174
" Gravel and sand... ..	150, 201
" Igneous rocks ...	150, 204
" Iron ore ...	150, 207, 208
" Limestone ...	151, 242
" Oil shale ...	151, 247
" Sandstone ...	151, 257
" Coal conveyed by rail ...	179
" Death-rate from accidents ...	91
" Persons employed ...	55, 58, 61, 64, 91, 151
Egypt, Mineral wealth ...	380
Electricity, Accidents caused by ...	75, 83
Electronite, Accidents with ...	80
Elgin, Igneous rocks... ..	150, 204
" Sandstone ...	151, 257
" Persons employed ...	64, 151
Emery, Output of :	
Bavaria ...	395
Greece ...	404
Turkey ...	442
United States ...	447
Employment of boys at Mines ...	108, 109
England, Summary of mineral output ...	130
Eritrea, Gold Mines ...	380
Essex, Chalk ...	148, 164
" Chert and flint ...	148, 165
" Clay ...	148, 166
" Gravel and sand ...	148, 201
" Persons employed ...	63, 149
Examinations for Managers' Certificates, List of Secretaries to Boards ...	44, 45
Explosions of fire-damp or coal-dust in the Mines of the United Kingdom, Accidents from 22, 23, 40, 41, 71-75, 88, 89	
" Accidents from, classified according to kind of Mine and cause ...	72, 73
Explosions of fire-damp or coal-dust in the Mines of :	
Austria ...	353
Prussia ...	400
(See also under "Accidents.")	
Explosives, Accidents with, at Mines 22-25, 28-31, 79-81, 83, 89	
" " Quarries ...	26, 27, 32, 33, 97, 98
(See also under "Accidents.")	
" in Coal Mines Order, remarks ...	106, 107
Exports of Clay ...	168, 169
" Coal, coke, &c. ...	175, 186-188
" Copper and copper ore ...	192-194
" Gold bullion and specie ...	200
" Iron ore ...	214, 215
" Iron and steel ...	225
" Lead and lead ore ...	235-238
" Patent fuel ...	175, 186-188
" Quicksilver ...	252
" Roofing slates ...	263, 264
" Salt ...	255
" Silver bullion and specie ...	258
" Tin ...	270
" Zinc and zinc ore ...	276, 277

F.

	Page.
FALLS OF GROUND, Accidents from, in Mines 22-25, 28-31, 40, 41, 71, 76, 77, 88, 89	
" " " Quarries 26, 27, 32, 33, 94, 96, 97	
" " Rules for prevention of accidents ...	77
" " Report of Prussian Commission ...	401
(See also under "Accidents.")	
Faroe Islands, Coal deposits ...	375
Fatal Accidents (see "Accidents, Fatal").	
Faversham powder, Accidents with ...	80
Federated Malay States, Accidents ...	290, 328
" " Mineral output ...	289, 327
" " Persons employed ...	288, 326
Felspar, Output of :	
Bavaria ...	395
Belgium ...	365
Canada ...	315
Norway ...	418
Ontario ...	318
Quebec ...	319
Sweden ...	437
United States ...	447
Fermanagh Co., Limestone ...	153, 242
" Sandstone ...	153, 257
" Persons employed... ..	65, 153
Ferro-manganese (see Iron) ...	217
Fife, Clay ...	150, 166
" Coal ...	150, 171, 174
" Gravel and sand ...	150, 201
" Igneous rocks ...	150, 204
" Iron ore ...	150, 207, 208
" Limestone ...	151, 242
" Sandstone ...	151, 257
" Blast furnaces ...	216, 222
" Death-rate from Accidents ...	91
" Persons employed ...	55, 61, 64, 91, 151
Fireclay, Output of :	
United Kingdom ...	15
Coalfields... ..	172
Australia... ..	297
Bavaria ...	395
Canada ...	315
Cape Colony ...	321
France ...	383
New South Wales ...	299
Sweden ...	437
Fires underground in Mines, Accidents ...	22, 23, 73
Fire-damp or coal-dust, Accidents from 22, 23, 28, 29, 40, 41, 71-75, 88, 89	
Flags, Output of :	
Algeria ...	348
Belgium ...	365
Canada ...	315
France ...	383
Quebec ...	319
Tunis ...	441
Flint and chert, Output of :	
United Kingdom ...	10, 38, 129, 165
Belgium ...	365
France ...	384
United States ...	447
Flintshire, Chert and flint ...	150, 165
" Clay ...	150, 166
" Coal ...	150, 171, 174
" Gravel and sand ...	150, 201

	Page.		Page.
Flintshire, Iron ore	150, 207, 209, 211	German East Africa, Mineral deposits	386
" Lead ore	151, 230, 233	German South-West Africa, Minerals found in... ..	403
" Limestone	151, 241	German Empire, Accidents... ..	290, 392-394
" Oil shale	151, 247	" " Mineral output	289, 389-392
" Sandstone	151, 256	" " Persons employed	288, 388, 389
" Silver	230, 233	Glamorganshire, Clay	150, 166
" Zinc ore	151, 273, 275	" Coal	150, 171, 172, 174
" Blast furnaces	216, 222	" Gravel and sand	150, 201
" Death-rate from Accidents	90	" Iron ore	150, 207, 208
" Lead smelters	239	" Limestone	151, 241
" Persons employed	55, 58, 61, 64, 90, 151	" Sandstone	151, 256
Fluorspar, Output of:		" Arsenic refiners	159
United Kingdom	10, 38, 129, 198, 199, 294	" Blast furnaces	216, 222
Bavaria	395	" Copper smelters	197
France	383	" Death rate from Accidents	91
Saxony	402	" Lead smelters	239
Spain	433	" Persons employed	55, 61, 64, 91, 151
United States	447	" Tin smelters	271
Forfar, Clay	150, 166	" Zinc smelters	278
" Gravel and sand	150, 201	Glasgow and South Western Railway, Coal carried	180
" Igneous rocks	150, 204	Gloucester and Berkeley Canal Coal traffic	181
" Sandstone	151, 257	Gloucestershire, Clay	148, 166
" Persons employed	64, 151	" Coal	148, 170, 174
Formosa, Mineral wealth	380	" Gravel and sand	148, 201
Forth and Clyde Canal Coal and Coke traffic	182	" Iron ore	148, 207, 209, 210
Fossil fuel, Production of Italy	411	" Limestone	149, 241
France, Accidents	290, 384, 385	" Ochre	149, 245, 246
" Mineral output	289, 383, 384	" Sandstone	149, 256
" Persons employed	288, 382	" Strontium sulphate	149, 264
" Legislation	381	" Coal conveyed by rail	178, 179
French Guiana, Mineral output	289, 386	" Death-rate from Accidents	90
French Soudan, Mineral output	289, 386	" Lead smelters	239
Frischglück Colliery, Austria, Explosion	357	" Persons employed	55, 57, 60, 63, 90, 149
Fuller's earth, Output of:		" Zinc smelters	278
United Kingdom (<i>see</i> Clay)	166	Gold bullion and specie exported and imported	200
France	383	" extracted from foreign cupreous pyrites	200, 228
United States	447	" ore, Imported	200
Furnaces, Blast, in United Kingdom, particulars of	218-223	Gold or Gold quartz, Output of:	
Furness Railway, Coal and coke carried by	178	United Kingdom	10, 38, 129, 199, 200, 289, 294, 295
G.			
GALENA (<i>see</i> Lead ore)	229	Abyssinia	289, 347
Galloway, Professor—Remarks on the Universal		Argentine Republic	289, 349
Colliery Explosion	74	Australia	289, 297
Galway Co., Igneous rocks	152, 204	Austria	289, 353
" Limestone	153, 242	Bolivia	289, 367
" Sandstone	153, 257	Brazil	289, 368
" Persons employed	65, 153	British Borneo	289, 310
Ganister (<i>see</i> Sandstone)	256	British Columbia	316
Garnet, Output of German East Africa	386	British Guiana	289, 311, 312
" India	331	British New Guinea	289, 312
" United States	447	Canada	289, 315
Gas, Carburetted hydrogen, Output of Italy	411	Cape Colony	289, 321
Gelatine-dynamite, Accidents with	80, 98	Celebes	377
Gelignite, Accidents with	80, 98	Chili	289, 371
General remarks:		China	289, 373
Appeals	108	Colombia... ..	289, 374
Coal cutting machinery	107, 108	Corea	289, 374
Danger of dust... ..	110	Costa Rica	289, 374
Employment of boys at mines	108, 109	Dutch Borneo	377
Explosives in Coal Mines Order	106, 107	Dutch East Indies	289, 375-377
Legislation	110	Dutch Guiana	289, 378
General Summary of the Mineral Output of:		Ecuador	289, 379
United Kingdom for 1900 and 1901	10, 129	Federated Malay States	289, 327
British Empire	289	Formosa	380
Foreign countries	289	France	289, 383
		French Guiana	289, 386
		French Soudan	289, 386
		German Empire... ..	289, 390, 392
		Gold Coast	289, 329
		Honduras	289, 407
		Hungary... ..	289, 359
		India	289, 331
		Italy	289, 411
		Japan	289, 413
		Java	377
		Madagascar	289, 414

	Page.
Gold or Gold quartz, Output of—cont.	
Mexico	289, 415
Natal	289, 337
New South Wales	299
New Zealand	289, 340
Nicaragua	289, 417
Norway	289, 418
Nova Scotia	317
Ontario	318
Peru	289, 420
Portugal	289, 423
Prussia	397
Quebec	319
Queensland	302
Rhodesia	289, 342
Russia	289, 429
Sarawak	310
Senegal	430
Servia	289, 431
South Australia... ..	304
Spain	289, 433
Sumatra... ..	378
Tasmania	305
Transvaal	289, 343, 344
United States	289, 448
Uruguay	289, 451
Venezuela	289, 451
Victoria	306
Western Australia	308
Gold Coast, Quantity of Gold exported ...	289, 329
" Accidents	329
" Persons employed	288, 328
Grand Canal Coal traffic	182
Granite, Output of	
United Kingdom (<i>included with Igneous rocks</i>). ...	
Australia	297
Bavaria	395
British Guiana	311
Canada	315
Ceylon	324
India	331
Newfoundland	338
Quebec	319
Queensland	302
Graphite, Output of:	
Austria	353
Bavaria	395
Canada	315
Ceylon	324
German Empire... ..	339
India	331
Italy	411
Japan	413
Mexico	415
Ontario	318
Peru	420
Quebec	319
Sweden	437
United States	447
Gravel and sand, Output of:	
United Kingdom	10, 38, 129, 201, 202, 294
Algeria	348
Belgium	365
Canada	315
Ceylon	324
France	384
India	331
Great Central Railway, Coal and Coke carried ...	178
Great Eastern Railway, Coprolites conveyed ...	250
Great Northern Railway, Coal carried ...	178
" " " Coprolites conveyed	250
" " " Salt conveyed... ..	255
" " " of Ireland, Coal and Coke	
carried	180
Great Southern and Western Railway, Coal and Coke	
 traffic	180
Great Western Railway, Coal and Coke carried... ..	178
Greece, Accidents	290, 404
" Mineral output	289, 404
" Persons employed	288, 404
Greenland, Output of Cryolite	375
" Persons employed	288, 375
Grindstones, Output of:	
Canada	315
Ceylon	324
United States	447
Guano, Output of:	
Chili	371
Guatemala, Mineral deposits	405
Gum, Kauri, Production of New Zealand	340
Gun-flints, Production of United Kingdom	165
Gunpowder, Accidents with	80, 98
Gypsum, Output of	
United Kingdom	10, 38, 129, 202, 203, 294
Algeria	348
Bavaria	396
Canada	315
Cyprus	326
France	384
Greece	404
India	331
Mexico	415
Nova Scotia	317
Ontario	318
Switzerland	439
United States	447

	Page.
Honduras, Mineral output	289, 407
Honestones, Production of Belgium	365
Hungary, Accidents	290, 360
" Mineral output	289, 359
" Persons employed	288, 359
Huntingdonshire, Clay	148, 166
" Persons employed	63, 149

I.

ICELAND, Minerals	375
Igneous rocks, Output of United Kingdom	10, 38, 129, 203, 204, 294
" Quarries, Accidents	93, 94
" Persons employed	62
Illinois, Accidents in Coal Mines	449
" Output of Coal	448
" Persons employed	446
" Coal-cutting machines	444
Imports of Coal	185
" Copper and copper ore	195, 196
" Gold and gold ore	200
" Iron ore	213-215
" Iron pyrites	227
" Lead and lead ore	237, 238
" Manganese ore	244
" Petroleum	249
" Phosphate of lime	250
" Quicksilver	251
" Silver bullion and specie	258
" Silver ore	258
" Tin and tin ore	269
" Zinc and zinc ore	276
Inclined and engine planes, Accidents	22-33, 79, 88, 89, 95, 99, 101
India, Accidents	290, 335, 336
" Mineral output	289, 331-334
" Persons employed	288, 330
" Legislation	336
Indo-China, Mineral output	289, 407
Indiana, Accidents in Coal Mines	449
" Persons employed	446
" Coal-cutting machines	444
Indian Territory, Accidents in Coal Mines	449
" Persons employed	446
" Coal-cutting machines	444
Infusorial earth, Output of Australia	297
" United States	447
" Victoria	306
Inspection districts for Mines and Quarries	44, 45
Inspectors of Mines, List of	44, 45
Inverness, Sandstone	151, 257
" Persons employed	64, 151
Iodine, Production of Chili	371
" Java (Dutch East Indies)	377
Iowa, Accidents in Coal Mines	449
" Persons employed	446
" Coal-cutting machines	444
Ireland, Summary of Mineral output	131
(See also under each County.)	
Lead smelters	240
Irish Coal-fields, Counties	52
" Fatal accidents	86-89
" Output of Mineral	172, 173
" Persons employed	53, 54, 173

	Page.
Iron or Iron ore, Output of:	
United Kingdom	10, 39, 129, 205-212, 215, 289, 294, 296
Alabama	449
Algeria	289, 348
Australia	289, 297
Austria	289, 353
Bavaria	289, 396
Belgium	289, 365
Bosnia and Herzegovina	289, 361
Canada	289, 315
Cuba	289, 375
France	289, 383
German Empire	289, 389, 392
Greece	289, 404
Hungary	289, 359
India	289, 331
Italy	289, 411
Japan	289, 413
Luxemburg	289, 390, 392
Michigan	449
Minnesota	449
Newfoundland	289, 338
New South Wales	299
Norway	289, 418
Nova Scotia	317
Ontario	318
Portugal	289, 423
Prussia	397
Quebec	319
Queensland	302
Russia	289, 429
Saxony	402
Spain	289, 433
Sweden	289, 437
Tasmania	305
United States	289, 448, 449
Western Australia	308
Iron ore, Exported	214, 215
Imported	213-215
Diagram showing output and import, 1873-1901	206
Fatal Accidents at Iron Mines	70
Output from Coal Mines	206, 207
" " Mines under the Coal Mines Act	10, 14, 15, 208
" " Metalliferous Mines Act	10, 16, 17, 209-211
" " Iron Mines	206, 207
" " Quarries	10, 18, 19, 212
" " Open workings	20, 21, 212
" " in each County	148, 150, 152, 207
" " from the several Coal-fields	172
Persons employed at Iron Mines	56-58
Quantity available for the blast furnaces	215
" smelted in United Kingdom	216, 218-223
Quarries, Accidents	93, 94
" Persons employed	62
Iron oxide, Production of Australia	297
" New South Wales	299
Iron, Pig, Exported	224-226
" Prices per ton in different districts	224, 225
" Output of the blast furnaces	216-224
" Quantity available for home consumption	224
" obtainable from British ores	129, 205
Iron pyrites, Imported	227
Countries whence exported	228
Output of:	
United Kingdom	10, 39, 129, 226, 227, 294
Bavaria	396
Belgium	365
Bosnia and Herzegovina	361
Canada	315
France	383
German Empire	389
Hungary	359

	Page.
Iron pyrites, Output of—cont.	
Italy	411
Japan	413
Newfoundland	338
Norway	418
Ontario	318
Portugal	423
Prussia	397
Russia	429
Saxony	402
Spain	434
Sweden	437
United States	447
Iron vitriol, Production of :	
Austria	353
German Empire	390
Hungary	359
Japan	413
Prussia	397
Irruptions of water, Accidents	22, 23, 79, 82, 88, 89
Isle of Man, Clay	152, 167
" Copper ore	152, 189, 190
" Gravel and sand	152, 202
" Igneous rocks	152, 204
" Lead ore	153, 230, 233
" Limestone	153, 242
" Sandstone	153, 257
" Silver	230, 233
" Slate	153, 260
" Zinc ore	153, 273, 275
" Summary of the Mineral output	131
" Persons employed	61, 65, 153
Isle of Wight (included with Hampshire).	
Italy, Accidents	290, 411, 412
" Mineral output	289, 411
" Persons employed	288, 409, 410
Ivory Coast, Mineral wealth	412

J.

JADE, Production of India	331
Japan, Accidents	290, 414
" Mineral output	289, 413
" Persons employed	288, 413
Java, Mineral output	377
Jet, Output of :	
United Kingdom	229
Cochin China	407
Spain	434
Johore, Mineral deposits	414

K.

KAINITE, Output of :	
German Empire... ..	389
Prussia	397
Kansas, Accidents at Coal Mines	449
" Persons employed	446
" Coal-cutting machines	444
Kauri gum, Production of New Zealand	340
Kent, Chalk	148, 164
" Chert and flint	148, 165

Kent, Clay	148, 166
" Gravel and sand	148, 201
" Limestone	149, 241
" Sandstone	149, 256
" Persons employed	55, 60, 63, 149
Kentucky, Accidents at Coal Mines	449
" Persons employed	446
" Coal-cutting machines	444
Kerry Co., Gravel and sand	152, 202
" Limestone	153, 242
" Slate	153, 260
" Persons employed	65, 153
Kildare Co., Gravel and sand	152, 202
" Limestone	153, 242
" Persons employed	65, 153
Kilkenny Co., Coal	152, 171, 174
" Gravel and sand	152, 202
" Limestone	153, 242
" Sandstone	153, 257
" Slate	153, 260
" Persons employed	56, 65, 153
Kimberley Diamond Mines, Accidents at	322, 323
" Persons employed at	320, 321
Kincardine, Igneous rocks	150, 204
" Sandstone	151, 257
" Persons employed	64, 151
King's County, Bog ore	153
" Gravel and sand	152, 202
" Limestone	153, 242
" Persons employed	65, 153
Kinross, Clay	150, 166
" Coal	150, 171, 174
" Igneous rocks	150, 204
" Persons employed	55, 64, 151
Kirkcubright, Igneous rocks	150, 204
" Persons employed	64, 151

L.

LABUAN, Output of coal	310
Lanarkshire, Clay	150, 166
" Coal	150, 171, 174
" Gravel and sand	150, 201
" Igneous rocks	150, 204
" Iron ore	150, 207, 208
" Lead ore	151, 230, 233
" Limestone	151, 242
" Oil shale	151, 247
" Sandstone	151, 257
" Silver	230, 233
" Blast furnaces	216, 223
" Coal conveyed by rail	179
" Death rate from accidents	90
" Persons employed	55, 61, 64, 90, 151
" Zinc smelters	278
Lancashire, Clay	148, 166
" Coal	148, 170, 174
" Copper ore	148, 189, 190
" Gravel and sand	148, 201
" Igneous rocks	148, 203
" Iron ore	148, 207, 209, 211
" Iron pyrites	148, 226
" Limestone	149, 241
" Salt	149, 253
" Sandstone	149, 256

	Page.		Page.
Lancashire, Slate	149, 260, 261	Leicestershire, Persons employed	55, 60, 63, 90, 149
" Blast furnaces	216, 219	Leitrim Co., Coal	152, 171, 174
" Coal conveyed by rail and canal	178, 179, 181	" Sandstone	153, 257
" Copper smelters	197	" Persons employed	56, 65, 153
" Death rate from accidents	90	Liberia, Mineral wealth	414
" Lead smelters	239	Lignite (<i>see Brown coal</i>)	
" Persons employed	55, 57, 60, 63, 90, 149	Limerick Co., Gravel and sand	152, 202
" Zinc smelters	278	" Igneous rocks	152, 204
Lancashire and Cheshire Coal-fields, Counties	52	" Limestone	153, 242
" " " Fatal Accidents	86-89	" Sandstone	153, 257
" " " Output of Mineral	172, 173	" Persons employed	65, 153
" " " Persons employed	53, 54, 173	Lime or limestone :	
Lancashire and Yorkshire Railway, Coal and Coke		Output of United Kingdom	10, 39, 129, 241, 242, 294
carried	178	Algeria	348
Laterite, Output of India	331	Australia	297
Lead obtainable from British ores	129, 230-233, 238	Bavaria	396
" " imported foreign ores	238	Belgium	365
" Prices of, in the London market	234, 235	Canada	315
" Quantity available for home consumption	238	Chili	371
" Smelters in United Kingdom	239, 240	France	383, 394
Lead and lead ore, Exported	235-238	India	331
" " Imported	237, 238	Malta	336
" " Output of :		Newfoundland	338
United Kingdom	10, 39, 129, 230-234, 289, 294, 295	New South Wales	299
Algeria	289, 348	Nova Scotia	317
Australia	289, 297	Ontario	318
Austria	289, 353	Queensland	302
Belgium	289, 365	Saxony	402
Bolivia	289, 367	Switzerland	439
British Columbia	316	Tunis	441
Canada	289, 315	United States	447
Chili	289, 371	Western Australia	308
France	289, 383	Limestone Quarries, Accidents	93, 94
German Empire	289, 389	" " Persons employed	62
Greece	289, 404	Lincolnshire, Chalk	148, 164
Hungary	289, 359	" Clay	148, 166
Italy	289, 411	" Gravel and sand	148, 201
Japan	289, 413	" Iron ore	148, 207, 208, 212
Mexico	289, 415	" Limestone	149, 241
New South Wales	299	" Blast furnaces	216, 219
Peru	289, 420	" Coal conveyed by rail	178
Portugal	289, 423	" Persons employed	57, 63, 149
Prussia	397	Linlithgowshire, Clay	150, 166
Quebec	319	" Coal	150, 171, 174
Queensland	302	" Gravel and sand	150, 201
Russia	289, 429	" Igneous rocks	150, 204
Servia	289, 431	" Iron ore	150, 207, 208
South Australia	304	" Oil shale	151, 247
Spain	289, 434	" Sandstone	151, 257
Sweden	289, 437	" Coal conveyed by rail	179
Tasmania	289, 305	" Death rate from Accidents	91
Tunis	289, 441	" Persons employed	55, 61, 64, 91, 151
United States	289, 448	Lithographic stone, Output of :	
Western Australia	308	Bavaria	396
Lead poisoning cases at Broken Hill Mines (New South Wales)	300	France	384
Leeds and Liverpool Canal Co. Coal traffic	181	Llanbradach Colliery Explosion	73, 74
Leeward Islands (<i>see Redonda and Sombrero</i>)		London and North Western Railway, Coal carried	178
Legislation relating to Mines in :		" " " Coprolites conveyed	250
United Kingdom	110	" " " Salt conveyed	254
France	381	Londonderry Co., Igneous rocks	152, 204
India	336	" Limestone	153, 242
New South Wales	301	" Sandstone	153, 257
Queensland	303	" Persons employed	65, 153
Western Australia	308, 309	Longford Co., Gravel and sand	152, 202
Leicestershire, Clay	148, 166	" Limestone	153, 242
" Coal	148, 170, 174	" Persons employed	65, 153
" Gravel and sand	148, 201	Louth Co., Gravel and sand	152, 202
" Igneous rocks	148, 203	" Igneous rocks	152, 204
" Iron ore	148, 207, 212	" Limestone	153, 242
" Limestone	149, 241	" Persons employed	65, 153
" Slate	149, 260	Luxemburg (G. Duchy) Output of iron ore	289, 390, 392
" Blast furnaces	216, 219	" Persons employed	288, 388
" Coal conveyed by rail	178, 179		
" Death rate from Accidents	90		

M.

	Page.		Page.
MACHINERY, COAL mined in the United States by	443	Marble, Output of—cont.	
Machinery, Accidents by, at Mines	22-25, 28-31, 79, 83, 84, 88, 89	Italy	409
" " Quarries	26, 27, 32, 33, 95, 99, 101	Mexico	415
Madagascar, Mineral wealth and export of gold	289, 414	Tunis	441
Magnesite, Production of:		Marl, Output of:	
Greece	404	United Kingdom (included with "Clay")	
India	331	Bavaria	395
United States	447	Belgium	365
Magnesium carbonate, Output of France...	384	France	384
" chloride, Production of:		United States	447
German Empire	390	Maryland, Accidents at Coal Mines	449
Prussia	398	" Persons employed	446
" salts, Production of:		" Coal-cutting machines...	444
German Empire	389	Maryport and Carlisle Railway Coal and Coke traffic	179
Prussia	397	Matagnite gelatine, accidents with	80, 98
" sulphate, Production of:		Matches or smoking, Explosions of fire-damp caused by	72
German Empire	390	Mayo Co., Bog ore	153
Prussia	398	" Persons employed	65, 153
Malay States (see Federated Malay States).		Meath Co., Gravel and sand	152, 202
Malta, Limestone exported from	336	" Igneous rocks	152, 204
Manchester Ship Canal Co., Salt conveyed	254	" Limestone	153, 242
Manganese ore, Imported	244	" Persons employed	65, 153
" Output of:		Mechanical Coal-cutters, number in use in United Kingdom, and coal got by	107, 108
United Kingdom	10, 39, 129, 243, 294	" " United States	443, 444
Australia	297	Melaphyre, Output of Bavaria	396
Austria	353	Mercury (see Quicksilver).	
Belgium	365	Merionethshire, Clay...	150, 166
Bosnia and Herzegovina	361	" Copper ore...	150, 189, 190
Brazil	368	" Gold	151, 199
Canada	315	" Igneous rocks	150, 203
Chili	371	" Limestone	151, 241
Colombia	374	" Manganese ore	151, 243
Cuba	375	" Sandstone	151, 256
Dutch East Indies	377	" Slate	151, 260, 262
France	383	" Death rate from accidents	90
German Empire	390	" Persons employed	61, 64, 90, 151
Greece	404	Mexico, Accidents	290, 416
Hungary	359	" Mineral output	289, 415
India	331	" Persons employed	288, 415
Italy	411	Mica, Output of:	
Japan	413	United Kingdom	10, 129-244, 294
Java	377	Australia	297
New South Wales	299	Canada	315
New Zealand	340	Ceylon	324
Nova Scotia	317	India	331
Portugal	423	Ontario	318
Prussia	397	Quebec	319
Queensland	302	Saxony	402
Russia	429	South Australia...	304
South Australia	304	United States	447
Spain	434	Western Australia	308
Sweden	437	Michigan, Accidents at Coal Mines	449
Turkey...	442	" " Ore	450
United States...	447	" Persons employed	446
Manjak, Output of Barbados	309	" Coal-cutting machines	444
Map of British Isles, shewing Inspection districts	46	Middlesex, Chalk	148, 164
Marble, Output of:		" Chert and flint	148, 165
Algeria	348	" Clay	148, 166
Belgium	365	" Gravel and sand	148, 201
France	384	" Persons employed in	63, 169
		" Lead smelters	239
		Midland coal-fields, Counties	52
		" Fatal accidents	86-89
		" Output of Minerals	172, 173
		" Persons employed	53, 54, 173
		Midland Great Western Railway Coal and Coke traffic	180
		Midland Railway Coal and Coke traffic	179
		" Coprolites conveyed	250
		Millstones, Output of:	
		Belgium	365
		France	384
		Greece	404
		Servia	431
		United States	447

	Page.
Mineral oil (<i>see</i> Petroleum).	
Mineral output of the several Coal-fields...	172, 173
" " per person employed ...	173
Mineral output of:	
United Kingdom, summary ...	10, 129-131, 294
British Empire, summary ...	289
Foreign Countries, summary ...	289
Mines in each county ...	132-139
Quarries in each county ...	140-145
Shallow workings, &c., in each county ...	146-147
Mineral output, County summary, all Mines, Quarries, &c. ...	148-153
Mineral paints, Output of United States ...	447
Mineral waters, Output of:	
Canada ...	315
Italy ...	411
Spain ...	434
United States ...	447
Mine, Definition of ...	5
Mines and Quarries, Inspection districts ...	44, 45
Miscellaneous fatal accidents at Mines 22-25, 40, 41, 79-83, 86, 88, 89	
" " Quarries 26, 27, 94-96, 99, 101	
" non-fatal accidents at Mines ...	28, 31
" " Quarries ...	32, 33
Missouri, Accidents at Coal Mines ...	449
" Persons employed ...	446
" Coal-cutting machines ...	444
Molybdenite, Output of Australia ...	297
" " Queensland ...	302
Monaghan Co., Gravel and sand ...	152, 202
" Limestone ...	153, 242
" Persons employed ...	65, 153
Monazite, Output of:	
Brazil ...	363
United States ...	447
Monkland Canal Coal and Coke traffic ...	182
Monmouthshire, Clay ...	148, 166
" Coal ...	148, 170, 174
" Gravel and sand ...	148, 201
" Iron ore ...	148, 207, 208
" Limestone ...	149, 241
" Sandstone ...	149, 256
" Blast furnaces ...	216, 219
" Coal conveyed by rail ...	178, 179
" Death rate from accidents ...	90
" Persons employed ...	55, 60, 63, 90, 149
Montana, Accidents at Coal Mines ...	449
" Persons employed ...	446
" Coal-cutting machines ...	444
Montgomeryshire, Barytes ...	150, 159, 161
" Clay ...	150, 166
" Igneous rocks ...	150, 203
" Lead ore ...	151, 230, 233
" Limestone ...	151, 241
" Sandstone ...	151, 256
" Silver ...	230, 233
" Slate ...	151, 260, 263
" Zinc ore ...	151, 273, 275
" Persons employed ...	61, 64, 151
Morocco, Mineral workings of ...	416
Mysore Gold Mines, Accidents ...	336
" " Persons employed ...	336

N.

	Page.
NAIRN, Igneous rocks ...	150, 204
" Sandstone ...	151, 257
" Persons employed ...	64, 151
Naked lights, Explosions of fire-damp caused by ...	72-75
Naphtha (<i>see</i> Petroleum).	
Natal, Accidents ...	290, 337
" Mineral output ...	289, 337
" Persons employed ...	288, 336
Natural gas, Output of:	
United Kingdom ...	128, 245
Canada ...	315
Ontario ...	318
United States ...	447
Negri Sembilan, Output of Tin ...	327
New Caledonia, Mineral output ...	289, 417
" Persons employed ...	288, 416
New Campbell Colliery, Natal Explosion ...	337
Newfoundland, Accidents ...	290, 338
" Mineral output of ...	289, 338
" Persons employed ...	288, 337
New Guinea (<i>see</i> British New Guinea).	
New Mexico, Accidents at Coal Mines ...	449
" Persons employed ...	446
" Coal-cutting machines ...	444
New South Wales, Accidents ...	290, 291, 300
" Mineral output ...	299
" Persons employed ...	299
" Legislation ...	301
New Zealand, Accidents ...	290, 340
" Mineral output ...	289, 340
" Persons employed ...	288, 339
Nicaragua, Output of Gold ...	289, 417
Nickel or nickel ore, Output of:	
United Kingdom ...	39, 188, 245
Canada ...	315
Chili ...	372
German Empire ...	389
Italy ...	411
New Caledonia ...	417
Norway ...	418
Ontario ...	318
Prussia ...	397
Saxony ...	402
United States ...	448
Nigeria, Mineral wealth ...	341
Nitrate of soda, Output of Chili ...	372
Non-fatal accidents at Mines in United Kingdom 28-31	
" " Quarries ...	32, 33
Norfolk, Chalk ...	148, 164
" Chert and flint ...	148, 165
" Clay ...	148, 166
" Gravel and sand ...	148, 201
" Limestone ...	149, 241
" Sandstone ...	149, 256
" Persons employed ...	63, 149
Northamptonshire, Clay ...	148, 166
" Gravel and sand ...	148, 201
" Iron ore ...	148, 207, 212
" Limestone ...	149, 241
" Sandstone ...	149, 256
" Blast furnaces ...	216, 219
" Persons employed ...	60, 63, 149
North Borneo, Mineral deposits ...	310
North British Railway, Coal and Coke traffic ...	180
North Eastern Railway, Coal and Coke traffic ...	179

	Page.		Page.
Northern Coal-field, Counties	52	Onyx, Output of :	
" Fatal accidents	86-89	Algeria	348
" Output of Mineral	172, 173	France	384
" Persons employed	53, 54, 173	Ontario, Accidents	290, 319
North Staffordshire Railway, Coal and Coke traffic	179	" Mineral output	318
" " " Salt conveyed	254, 255	" Persons employed	318
Northumberland, Barytes	148, 159, 160	Opal, Output of :	
" Clay	148, 166	Australia	297
" Coal	148, 170, 174	New South Wales	299
" Gravel and sand	148, 201	Queensland	302
" Igneous rocks	148, 203	Orange River Colony, Diamonds	341
" Lead ore	149, 230, 231	Orkney, Sandstone	151, 257
" Limestone	149, 241	" Persons employed	64, 15
" Sandstone	149, 256	Orrell Colliery Explosion	74, 75
" Silver	230, 231	Output of Minerals from Mines in each inspection district under the Coal Mines Act	14, 15
" Zinc ore	149, 273, 274	Do. Do. per Person employed	14, 15
" Coal conveyed by rail	179	Output of Minerals from Mines in each inspection district under the Metalliferous Mines Act	16, 17
" Copper smelters	197	Output of Minerals from Quarries in each inspection district under the Quarries Act	18, 19
" Death rate from accidents	90	Output of Minerals from certain shallow workings	20, 21
" Lead smelters	239	Output of Minerals from each county under the Coal Mines Act	132-135
" Persons employed	55, 60, 63, 90, 149	Output of Minerals from each county under the Metalliferous Mines Act	136-139
North Wales Coal-field, Counties	52	Output of Minerals from each county under the Quarries Act	140-145
" Fatal accidents	86-89	Output of Minerals from shallow workings, brine wells, &c.	146, 147
" Output of Mineral	172, 173	Output of Minerals from the several Coal-fields	172, 173
" Persons employed	53, 54, 173	" " from Mines, 1873 to 1901	37
Norway, Mineral output	289, 418	" " from Mines and Quarries, 1873 to 1901	38, 39
" Persons employed	288, 418	" " in United Kingdom, General Summary	10, 129, 294
Nottinghamshire, Clay	148, 166	" " in British Colonies	289
" Coal	148, 170, 174	" " in Foreign Countries	288
" Gravel and sand	148, 201	" " (see also under each Colony and Country, and under each Mineral).	
" Gypsum	148, 202	Overwinding, Accidents from	22, 28, 77, 78, 88, 89
" Iron pyrites	148, 226	Oxfordshire, Chalk	148, 164
" Limestone	149, 241	" Chert and flint	148, 165
" Sandstone	149, 256	" Clay	148, 166
" Blast furnaces	216, 220	" Gravel and sand	148, 201
" Coal conveyed by rail	178, 179	" Iron ore	148, 207, 212
" Copper smelters	197	" Limestone	149, 241
" Death-rate from accidents	90	" Sandstone	149, 256
" Persons employed	55, 60, 63, 90, 149	" Persons employed	60, 63, 149
Nova Scotia, Accidents	290, 318	Ozokerite, Output of Austria	354
" Mineral output	317		
" Persons employed	317		
O.			
OCHRE AND UMBER, Output of :			
United Kingdom	10, 39, 129, 245-247, 294		
Bavaria	396		
Belgium	365		
Canada	315		
Cyprus	326		
France	384		
Japan	413		
Quebec	319		
Saxony	402		
Spain	434		
Ohio, Accidents at Coal Mines	449		
" Persons employed	446		
" Coal-cutting machines	444		
" Output of Coal	448		
Oil shale, Output of :			
United Kingdom	10, 39, 129, 247, 248, 294		
Australia	297		
New South Wales	299		
New Zealand	340		
Oil stones, Output of United States			
	447		
P.			
PAHANG, Mineral output			
	327		
Paraguay, Mineral deposits of			
	419		
Patent fuel, Exported			
	175, 186-188		
" Shipped coastwise			
	183, 184, 188		
Paving stone, Output of :			
Bavaria	396		
Belgium	365		
France	384		
Peat, Output of :			
Canada	315		
France	383		
Holland	405		
Italy	411		

	Page.
Peebles, Coal	150, 171, 174
" Igneous rocks	150, 204
" Limestone	151, 242
" Sandstone	151, 257
" Persons employed	55, 64, 151
Pembroke, Coal and anthracite	150, 171, 172, 174
" Igneous rocks	150, 203
" Limestone	151, 241
" Sandstone	151, 256
" Slate	151, 260
" Persons employed	55, 64, 151
Pennsylvania, Accidents	449
" Output of Coal	448
" Persons employed	446
" Coal-cutting machines	444
Perak, Output of Tin	327
Persia, Minerals obtained in	419
Persons employed in inspection districts under the Coal Mines Act	11
Persons employed in inspection districts under the Metalliferous Mines Act	12
Persons employed in inspection districts under the Quarries Act	13
Persons employed in each county under the Coal Mines Act	133, 135
Persons employed in each county under the Metalliferous Mines Act	137, 139
Persons employed in each county under the Quarries Act	62-65, 141, 143, 145
Persons employed in the several Coal-fields	53, 54, 173
" " at Coal Mines	52, 55, 56, 174
" " Iron Mines	52, 56-58
" " "other" Mines	52, 59-61
" " different kinds of Quarries	62
" " Mines, 1873 to 1901	36
" " Mines and Quarries in United Kingdom, Summary 6, 9, 51, 153, 288, 293	
" " Mines and Quarries in British Colonies, Summary of	288
Persons employed at Mines and Quarries in Foreign Countries, Summary of	288
Persons employed in Mining in :	
Algeria	288, 347
Australia	288, 296
Austria	288, 351-353
Bahamas	288, 309
Banca	376
Barbados	288
Bavaria	395
Belgium	288, 362, 363
Billiton	376
Bohemia	358
Bosnia and Herzegovina	288, 361
British Columbia	316
British Guiana	288, 311
British New Guinea	288
Bulgaria	288, 369
Canada	288, 316-319
Cape Colony	288, 320
Ceylon	288, 324
Channel Islands	325
Chili	288, 370
Corea	288, 374
Dutch East Indies	288, 376, 378
Federated Malay States	288, 326
France	288, 382
German Empire	288, 388, 389
Gold Coast	328
Greece	288, 404
Greenland	288, 375
Holland	288, 405, 406
Hungary	288, 359
India	288, 330
Italy	288, 409, 410
Japan	288, 413
Kimberley	320, 321

	Page.
Persons employed in Mining in—cont.	
Luxemburg	288, 388
Mexico	288, 415
Natal	288, 336
New Caledonia	288, 416
Newfoundland	288, 337
New South Wales	299
New Zealand	288, 339
Norway	288, 418
Nova Scotia	317
Ontario	318
Peru	288, 419
Portugal	288, 422
Prussia	396
Quebec	319
Queensland	302
Redonda	288
Rhodesia	342
Russia	288, 427, 428
Saxony	402
Servia	288, 430
Siam	288, 431
Singkep	378
South Australia	303
Spain	288, 432, 433
Sumatra	378
Sweden	288, 436
Switzerland	288, 438, 439
Tasmania	305
Transvaal	288, 343
United States	288, 446
Victoria	306
Western Australia	307
Persons employed at Petroleum Wells :	
Austria	353
Russia	428
Persons employed at Quarries :	
Algeria	347
Belgium	362
British Guiana	311
Ceylon	324
Channel Islands	325
France	382
German Empire	394
India	330
Italy	409
Newfoundland	337
Peru	419
Portugal	422
South Australia	303
Sweden	436
Switzerland	438, 439
Persons employed at Salt Works :	
Austria	352
Bosnia and Herzegovina	361
German Empire	389
Italy	409
Russia	428
Persons employed at Turbaries :	
Holland	405
Italy	409
Perthshire, Gravel and sand	150, 201
" Igneous rocks	150, 204
" Limestone	151, 242
" Sandstone	151, 257
" Slate	151, 260
" Persons employed	64, 151
Peru, Mineral output	289, 420
" Persons employed	288, 419
Petroleum, Imported	249
Petroleum, Output of :	
United Kingdom	10, 15, 129, 248, 289, 294
Austria	289, 354
Barbados	289, 309

		Page.			Page.
Petroleum, Output of— <i>cont.</i>			Precious stones, Output of— <i>cont.</i>		
Bavaria ...	...	396	India ...	...	331
Canada ...	...	289, 315	Mexico ...	...	415
Dutch Borneo ...	...	377	New South Wales ...	...	399
Dutch East Indies... ..	289, 377, 378		Queensland ...	...	302
German Empire ...	...	289, 389	Siam ...	...	431
Hungary ...	...	289, 359	Spain ...	...	434
India ...	...	289, 331	United States ...	...	447
Italy... ..	...	289, 411	Prices of sea-borne Coal in the London market...	176, 177	
Japan ...	...	289, 413	" Coal at the pit's mouth ...	170, 171, 173, 174, 177	
Java... ..	...	377	" " at various shipping ports ...	... 177	
Ontario ...	...	318	" " Diagram shewing fluctuations from 1873		
Peru ...	...	289, 420	to 1901 ...	... 278	
Prussia ...	...	397	" Pig iron at the works ...	224, 225	
Roumania ...	...	289, 425	" Antimony in London market ...	155	
Russia ...	...	289, 429	" Copper " " ...	191, 192	
Sumatra ...	...	378	" Lead " " ...	234, 235	
United States ...	...	289, 447	" Standard silver " " ...	259	
Philippine Islands, Mineral deposits ...	...	421	" Tin " " ...	268	
Phosphate of alumina, Output of Redonda ...	...	341	" Zinc " " ...	277, 278	
Phosphate of lime, Conveyed by railway...	...	250	" Cleveland Pig, Copper, Lead, Tin, and Zinc;		
" " Imported ...	...	250	Diagram shewing fluctuations from 1873		
" " Output of :			to 1901... ..	278	
United Kingdom	10, 39, 129, 249,	250, 294	Prosecutions under the Mines Act ...	102, 103	
Algeria ...	...	348	" " Quarries Act ...	104, 105	
Aruba ...	...	379	" " Factory and Workshop Acts	105, 106	
Belgium ...	...	365	" " (see also Appeals) ...	108	
Canada ...	...	315	Prussia, Accidents ...	398-401	
Chili ...	...	371	" Mineral output ...	397, 398	
Christmas Island ...	...	325	" Persons employed ...	396	
France ...	...	384	" Report of Commission upon Accidents from		
Norway ...	...	418	Falls of Stone and Coal ...	401	
Porto Rico ...	...	421	" Cases of Ankylostomiasis ...	401	
Quebec ...	...	319	Pyrites (see Arsenical pyrites, Copper ore, and Iron pyrites).		
Russia ...	...	429			
Spain ...	...	434			
Tunis ...	...	441			
United States ...	...	447			
Pig iron (see Iron, Pig).					
Platinum, Output of :					
Australia... ..	...	297			
Colombia... ..	...	374			
New South Wales ...	...	299			
Russia ...	...	429			
United States ...	...	448			
Plumbago (see Graphite).					
Pluto Colliery, near Wiesa, Austria, explosion ...	...	357			
Porcelain earth, Output of Bavaria ...	...	396			
Porphyry, Output of Australia ...	...	297			
" " Queensland ...	...	302			
Porto Rico, Mineral deposits ...	...	421			
Portugal, Accidents ...	...	290, 423			
" Mineral output ...	...	289, 423			
" Persons employed ...	...	288, 422			
Portuguese East Africa, Minerals ...	...	424			
" Nyassaland, Minerals ...	...	424			
Potassium, United Kingdom ...	...	251			
Potassium salts, Output of :					
German Empire... ..	...	389, 390			
Prussia ...	...	397, 398			
Potter's clay, Exported ...	...	168			
" Output of :					
United Kingdom ...	...	166			
France ...	...	383			
Tunis ...	...	441			
Pozzolana, Output of Switzerland ...	...	439			
Precious stones, Output of :					
Australia... ..	...	297			
Borneo, Dutch ...	...	377			
Brazil ...	...	368			
Cape Colony ...	...	321			
Ceylon ...	...	324			
France ...	...	382, 383			
German, East Africa ...	...	386			

Q.

QUARRIES, Death-rate from accidents ...	8, 34, 92, 98
" Fatal accidents ...	7, 9, 26, 27, 91-101
(See also under Accidents.)	
" Fatal accidents at different kinds of ...	93, 94
" Non-fatal accidents ...	32, 33
" Suggestions for preventing accidents...	97, 98, 101
" Number at work ...	13, 62-65
" Mineral output, summary of...	10
" " " in each county ...	140-145
" " " inspection district	18, 19
" Persons employed, summary of ...	6, 9, 62
" " " in each county	63-65, 141, 143
" " " " "	145
" " " in each inspection district	13
" " " at different kinds of ...	62
Quarries, Output of :	
Algeria ...	348
Belgium ...	365
France ...	383, 384
Italy ...	411
Sweden ...	437
Switzerland ...	439
Quartz, Output of :	
Saxony ...	402
Quartzite (see Sandstone) ...	256
Quebec, Accidents ...	290, 319
" Mineral output ...	319
" Persons employed ...	319

	Page.		Page.
Queen's County, Clay	152, 167	Roscommon Co., Coal	152, 171, 174
" Coal	152, 171, 174	" Sandstone... ..	153, 257
" Gravel and sand	152, 202	" Persons employed	56, 65, 153
" Igneous rocks	152, 204	Ross and Cromarty, Igneous rocks	150, 204
" Limestone... ..	153, 242	" Sandstone	151, 257
" Persons employed	56, 65, 153	" Persons employed	64, 151
Queensland, Accidents	290, 291, 303	Roumania, Mineral output... ..	289, 425
" Mineral output	302	Roxburgh, Igneous rocks	150, 204
" Persons employed	302	" Sandstone	151, 257
" Legislation	303	" Persons employed	64, 151
Quicksilver, United Kingdom	251	Rubies, Output of India	331
" Exported	252	Rules for preventing accidents from falls of ground	77
" Imported	251	Russia, Accidents	429
Quicksilver ore, Output of :		" Mineral output	289, 428, 429
Austria	353	" Persons employed	288, 427, 428
German Empire... ..	390	Rutile (<i>see</i> Titanium).	
Hungary	359	Rutland, Iron ore	148, 207, 212
Italy	411	" Limestone	149, 241
Japan	413	" Sandstone	149, 256
Peru	420	" Persons employed	60, 63, 149
Russia	429		
Spain	434		
United States	448		

R.

RADNORSHIRE, Igneous rocks	150, 203
" Limestone	151, 241
" Sandstone	151, 256
" Persons employed... ..	61, 64
Railway traffic of Coal and Coke	178-180
Railways, Sidings, and Tramways, Accidents on at Mines	22-25, 28-31, 85, 86, 88, 89
Railways, Sidings, and Tramways, Accidents on, at Quarries	26, 27, 32, 33, 95, 99-101
Redonda, Output of Phosphate of alumina	341
" Persons employed	288
Red oxide of iron, Output of Gloucestershire and Somerset	246
Regulus, Exported	194
" Imported	195, 196
Renfrewshire, Barytes	150, 159, 161
" Clay	150, 166
" Coal	150, 171, 174
" Gravel and sand	150, 201
" Igneous rocks	150, 204
" Iron ore	150, 207, 208
" Limestone	151, 242
" Oil shale	151, 247
" Sandstone	151, 257
" Coal conveyed by rail	179
" Persons employed	55, 58, 61, 64, 151
Rhodesia, Mineral output	289, 342
" Persons employed	289, 341
Robson, J. T., Remarks on the Universal Colliery Explosion	74
Roburite, Accidents with	75, 80
Rock salt, Carted inland	254
" Conveyed by railways, &c.	254
" Exported	255
" Output of United Kingdom	10, 253
Ronaldson, J. M., Remarks on number of Firedamp Explosions	74
Roofing slates, Exported	263, 264
Ropes or chains breaking, Accidents from	22, 26, 28, 30, 32, 78, 79, 88, 89, 95, 99

S.

SABA, Sulphur deposits	379
Safety lamps, Accidents caused by	72
" men as temporary Inspectors in Saxon mines	403
St. Martin, Salt workings	379
Sahara, Salt deposits	429
Salt, Exported	255
" Conveyed by railway, canal, &c.	254, 255
" Rock and white, Output of :	
United Kingdom	10, 39, 129, 253, 289, 294
Abyssinia	289, 347
Aden	289, 296
Algeria	289, 346
Australia	289, 297
Austria	289, 354
Bahamas	289, 309
Bavaria	396
Bonaire and St. Martin	379
Bosnia and Herzegovina	289, 361
Brazil	368
Canada	289, 315
Cape Colony	289, 321
Ceylon	289, 324
Chili	289, 372
China	289, 373
Curaçoa	379
Cyprus	289, 326
Dutch West Indies	289, 379
France	289, 383
German Empire	289, 389-391
Greece	289, 404
Honduras	289, 407
Hungary	289, 359
India	289, 331
Italy	289, 411
Japan	289, 413
Mexico	289, 415
Ontario	318
Peru	289, 420
Prussia	397, 398
Roumania	289, 425
Russia	289, 429
South Australia	304
Spain	289, 434
Switzerland	289, 439

	Page.		Page.
Salt, Rock and white, Output of— <i>cont.</i>		Silver bullion and specie, Imported and exported, Value	
Tunis	289, 441	of	258
Turkey	289, 442	" extractors and refiners (<i>see</i> Copper and Lead	
Turks and Caicos Islands	289, 346	smelters)	196, 197, 239, 240
United States	289, 447	" extracted from imported Pyrites	228, 257
Venezuela	289, 451	" obtainable from British Lead ore	129, 230-234, 257
Western Australia	308	" Prices of standard, in London market	259
Saltpetre, Output of India	331	" ore, Imported	258
Sand and gravel, Output of :		Silver or silver ore, Output of :	
United Kingdom	10, 38, 129, 201, 202	United Kingdom	129, 230, 257, 289, 295
Algeria	348	Abyssinia	289, 347
Bavaria	396	Algeria	289, 348
Belgium	365	Argentine Republic	289, 349
Canada	315	Australia	289, 297
France	384	Austria	289, 353
Sandstone, Output of :		Bolivia	289, 367
United Kingdom	10, 39, 129, 256, 257, 294	British Columbia	316
Australia	297	Canada	289, 315
Bavaria	396	Chili	289, 372
India	331	Colombia	289, 374
Queensland	302	Dutch East Indies	289, 378
Sandstone Quarries, Accidents	93, 94	Ecuador	289, 379
" " Persons employed	62	France	289
Sandwich Islands, Mineral Deposits	430	German Empire	289, 390, 392
Sapphire, Output of Australia	297	Honduras	289, 407
" " Queensland	302	Hungary	289, 359
Sarawak, Mineral output	310	Italy	289, 411
Saxony, Accidents with	80	Japan	289, 413
Saxony, Accidents	403	Mexico	289, 415
" Mineral output	402	New South Wales	299
" Persons employed	402	New Zealand	299, 340
Scottish Coal-fields, Counties	52	Norway	289, 418
" " Fatal Accidents	86-89	Ontario	318
" " Output of minerals	172-173	Peru	289, 420
" " Persons employed	53, 54, 173	Prussia	397
Scotland, Summary of Mineral output	131	Queensland	302
" Copper smelters	197	Russia	289, 429
" Lead smelters	240	Saxony	402
" Railway and canal traffic of Coal and coke	179	Servia	289, 431
Selangor, Output of Tin	328	South Australia	304
Selkirk, Igneous rocks	150, 204	Spain	289, 434
" Persons employed	64, 151	Sweden	289, 437
Senegal, Gold exported	430	Tasmania	305
Servia, Accidents	290, 431	United States	289, 448
" Mineral output	289, 431	Uruguay	289, 451
" Persons employed	288, 430	Western Australia	308
Severn Navigation Coal and Coke traffic	181	Silver lead ore, Output of :	
Shaft Accidents	22-25, 28-31, 40, 41, 71, 77, 78, 88, 89	United Kingdom	230-234
Shale (<i>see</i> Oil shale).		Algeria	348
Shetland, Persons employed	64	Australia	297
Shipments of China clay, and stone	167, 168	Bolivia	367
" Coal, coke, &c. coastwise	183, 184	Chili	371
Shot-firing, Accidents caused by, in Mines	73, 74	France	383
" " Quarries	97, 98	Greece	404
Shropshire, Barytes	148, 159, 161	Hungary	359
" Clay	148, 166	New South Wales	299
" Coal	148, 170, 174	South Australia	304
" Gravel and sand	148, 201	Spain	434
" Igneous rocks	148, 203	Sweden	437
" Iron ore	148, 207, 208	Tasmania	305
" Iron pyrites	148, 226	Turkey	442
" Lead ore	149, 230, 231	Singkep, Output of Tin	378
" Limestone	149, 241	" Persons employed	378
" Sandstone	149, 256	Slate, Output of :	
" Zinc ore	149, 273, 274	United Kingdom	10, 39, 129, 260-263, 294
" Blast furnaces	216, 220	Australia	297
" Coal conveyed by rail	178, 179	Bavaria	396
" Death-rate from accidents	90	Belgium	365
" Persons employed	55, 57, 60, 63, 90, 149	Canada	315
Shropshire Union Canal Coal and Coke traffic	181	France	384
Siam, Mineral output	289, 431	India	331
" Persons employed	288, 431	Newfoundland	338
Silicon iron	217	Quebec	319
		Queensland	312
		Slate Quarries, Accidents	93, 94
		" Persons employed	62

	Page.		Page.
Slate Dressing Accidents	84	Staffordshire, Salt	149, 253
Slates, roofing, Exported	263, 264	" Sandstone	149, 256
Sligo Co., Barytes	152, 160, 161	" Blast furnaces	216, 220
" Coal	152, 171, 174	" Coal conveyed by rail	178, 179
" Limestone... ..	153, 242	" Death-rate from accidents... ..	90
" Persons employed	56, 61, 65, 153	" Persons employed	55, 57, 60, 63, 90, 149
Sligo, Leitrim and Northern Counties Railway Coal and		Staffordshire and Worcestershire Canal Coal and Coke	
Coke traffic	180	traffic	182
Small detached coalfields, Counties	52	" " " " " " " " " " " "	Salt conveyed 255
" " Fatal accidents	86-89	Standard silver, Prices in the London market	259
" " Output of minerals	172, 173	Steatite (<i>see</i> Soapstone).	
" " Persons employed	53, 54, 173	Stirlingshire, Clay	150, 166
Smelters, Antimony	155	" Coal	150, 171, 174
" Copper	196, 187	" Gravel and sand	150, 201
" Lead	239, 240	" Igneous rocks	150, 204
" Tin	271	" Iron ore	150, 207, 208
" Zinc... ..	278	" Limestone	151, 242
Soapstone, Output of :		" Oil shale	151, 247
United Kingdom	264	" Sandstone	151, 257
Bavaria	396	" Blast furnaces	216, 223
Canada	315	" Coal conveyed by rail	179
France	384	" Death-rate from accidents	90
India	331	" Persons employed	55, 61, 64, 90, 151
Spain	434	Stokes, A. H., Remarks on Haulage Accidents	83
United States	447	Stone, Output of :	
Soda (<i>see</i> Nitrate of soda).		Algeria	348
Sodium, Production in United Kingdom... ..	129, 264, 295	Australia... ..	297
Sodium sulphate, Output of :		Belgium	365
German Empire	390	Canada	315
Prussia	398	Ceylon	324
Russia	429	Channel Islands... ..	325
Somali Coast Protectorate, Mineral deposits	342	France	384
Somersetshire, Chalk	148, 164	Holland	406
" Chert and flint	148, 165	India	331
" Clay	148, 166	Malta	336
" Coal	148, 170, 174	Newfoundland	338
" Fuller's earth	166	New South Wales	299
" Gravel and sand	148, 201	Ontario	318
" Gypsum	148, 202	Queensland	302
" Iron ore	148, 207, 212	Roumania	425
" Lead ore	149, 230, 233	Tunis	441
" Limestone	149, 241	United States	447
" Ochre	149, 245, 246	Victoria	306
" Sandstone	149, 256	Straits Settlements, Mineral output	342
" Slate	149, 260	Strontium sulphate, Output in United Kingdom 10, 39,	
" Strontium sulphate	264	129, 264, 265, 294	
" Coal conveyed by rail	178, 179	Suffocation by natural gases, Accidents from 22, 23, 28, 29, 79,	
" Copper smelters	197	81, 88, 89	
" Death rate from accidents	90	Suffolk, Chalk	148, 164
" Lead smelters	239	" Chert and flint	148, 165
" Tin smelters	271	" Clay	148, 166
" Persons employed	55, 60, 63, 90, 149	" Gravel and sand	148, 201
Soudan, Mineral wealth	380	" Persons employed	60, 63, 149
South Australia, Mineral output	304	Sulphate of barium, Output of United Kingdom 159-161	
" " Persons employed	303	" " " " " " " " " " " "	Spain ... 433
South Wales Coalfield, Counties	52	" sodium (<i>see</i> Sodium sulphate).	
" " Fatal accidents	86-89	" strontia (<i>see</i> Strontium sulphate).	
" " Mineral output	172, 173	Sulphur or sulphur ore, Output of :	
" " Persons employed	53, 54, 173	Austria	353
Spain, Accidents	290, 434, 435	Chili	372
" Mineral output	289, 433, 434	Greece	404
" Persons employed	288, 432, 433	Hungary	359
Special rules for timbering... ..	77	Italy	411
Spelter (<i>see</i> Zinc)	273-278	Japan	413
Spiegeleisen (<i>see</i> Iron)	217	Peru	420
Spitzbergen coal deposits	435	Russia	429
Staffordshire, Clay	148, 166	Spain	434
" Coal	148, 170, 174	Sweden	437
" Gravel and sand	148, 201	United States	447
" Gypsum	148, 202	Sumatra, Mineral output	378
" Igneous rocks	148, 203	" Persons employed	378
" Iron ore	148, 207, 208, 212	Summaries, County, of Mineral output and persons	
" Iron pyrites	148, 226	employed... ..	132-153
" Limestone	149, 241	Summary of fatal accidents in Mines and Quarries of	
" Oil shale	247	the United Kingdom	7, 9
" Petroleum	149, 248	Summary of fatal accidents in Mines and Quarries of	
		the British Empire	290

	Page.		Page
Summary of fatal accidents in Mines and Quarries of Foreign countries	290	Tin ore, Output of :	
Summary of Metals produced from British ores	129	Cornwall and Devon	149, 265-267
Summary of Mineral output of United Kingdom 6, 10, 129		Dolcoath Mine	265, 266
Summary of Mineral output of England, Wales, Scotland, Ireland, and Isle of Man, separately 130, 141		" smelters	271
Summary of Mineral output of British Empire	289	" standards	269
" " " Foreign countries	289	" stream works in Cornwall	267
Summary of Persons employed in Mines and Quarries of the United Kingdom	69	Tin or tin ore, Output of :	
Summary of Persons employed in Mines and Quarries of the British Empire	288	United Kingdom 10, 39, 129, 265, 267, 289, 294, 295	
Summary of Persons employed in Mines and Quarries of Foreign countries	288	Australia... ..	289, 297
Surface, Accidents at Mines, on 22-25, 28-31, 40, 41, 71, 84-86, 88, 89		Austria	289, 353
Surinam (<i>see</i> Dutch Guiana).		Banca and Billiton	376
Surrey, Chalk	148, 164	Bolivia	289, 367
" Chert and flint	148, 165	Chili	289, 372
" Clay	148, 166	Dutch East Indies	289, 376, 378
" Fuller's earth	166	Federated Malay States	289, 327, 328
" Gravel and sand	148, 201	German Empire	289, 390
" Limestone	149, 241	India	289, 331
" Sandstone	149, 256	Japan	289, 413
" Lead smelters	239	Mexico	289, 415
" Persons employed	60, 63, 149	New South Wales	299
Sussex, Chalk	148, 164	Portugal	289, 423
" Chert and flint	148, 165	Queensland	302
" Clay	148, 166	Russia	289, 429
" Gravel and sand	148, 201	Saxony	402
" Gypsum	148, 202	Siam	289, 431
" Limestone	149, 241	Singkep	378
" Natural Gas... ..	128, 245	South Australia... ..	304
" Sandstone	149, 256	Spain	289, 434
" Persons employed	60, 63, 149	Tasmania... ..	305
Sutherland, Coal	150, 171, 174	Victoria	306
" Oil shale	151, 247	Western Australia	308
" Sandstone	151, 257	Tipperary Co., Coal	152, 171, 174
" Persons employed	55, 61, 151	" Gravel and sand	152, 202
Sweden, Accidents	290, 437	" Limestone	153, 242
" Mineral output	289, 437	" Sandstone	153, 257
" Persons employed... ..	288, 436	" Slate	153, 260
Switzerland, Accidents	290, 440	" Persons employed	56, 61, 65, 153
" Mineral output	289, 439	Titanium ore or rutile, Output of :	
" Persons employed	288, 438, 439	Norway	418
Syenite (<i>see</i> Igneous rocks)	203	United States	447
		Tong-King, Output of coal	407
		Topaz, Output of Spain	434
		Tourmaline, Output of India	330, 331
		Trams and tubs, Accidents	22, 23, 28-31, 79, 88, 89
		Transvaal, Accidents	290, 344
		" Mineral output	289, 343, 344
		" Persons employed	288, 342, 343
		Trent and Mersey Navigation Coal and Coke traffic	182
		Trinidad, Output of asphalt	345
		Tripoli and infusorial earth, Production of :	
		Canada	315
		Nova Scotia	317
		United States	447
		Tungsten ore (<i>see</i> Wolfram).	
		Tunis, Mineral output	289, 441
		Turbaries, France, Output from	383
		" Holland, "	405
		" " Persons employed	405
		" Italy, Output from	409, 411
		" " Persons employed	409
		" Russia	427
		" Sweden	436
		Turkey, Mineral resources	289, 441, 442
		Turks and Caicos Islands, Output of Salt	289, 346
		Tyrone Co., Clay	152, 167
		" Coal	152, 171, 174
		" Gravel and sand	152, 202
		" Igneous rocks	152, 204
		" Limestone	153, 242
		" Sandstone	153, 257
		" Persons employed	56, 65, 153
TAFF VALE RAILWAY Coal and Coke traffic	179		
Talc, Output of :			
Canada	315		
France	384		
Ontario	318		
United States	447		
Talk-o-th'-Hill Colliery explosion	73, 74		
Tasmania, Accidents	290, 291, 305		
" Mineral output	305		
" Persons employed	305		
Tennessee, Accidents at coal mines	450		
" Persons employed	446		
" Coal-cutting machines	444		
Timbering, Systematic, Rules for	77		
Tin, Average price in the London market	268		
" Exported... ..	270		
" Imported	269		
" obtainable from British ore	129, 265-267		

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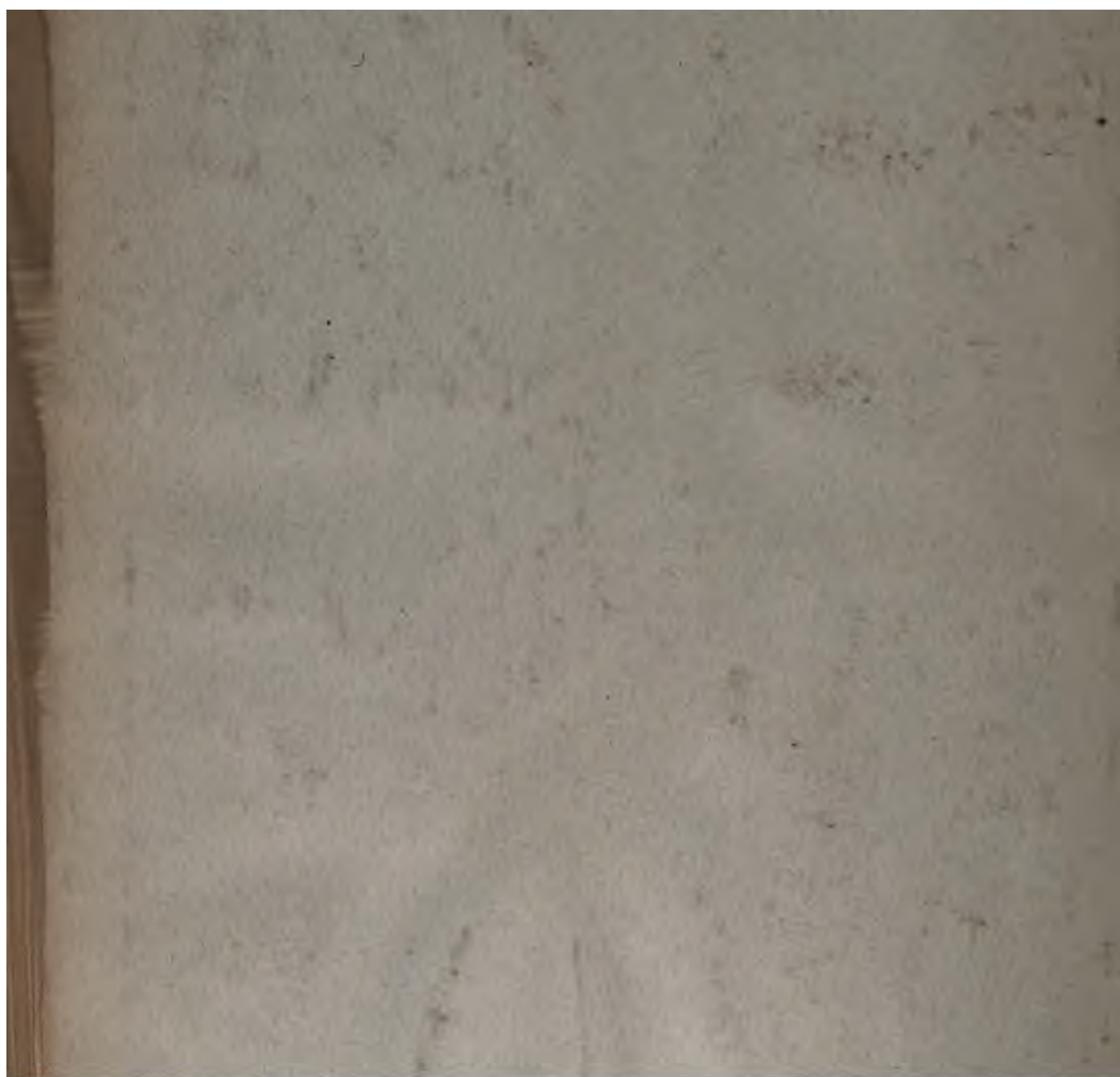
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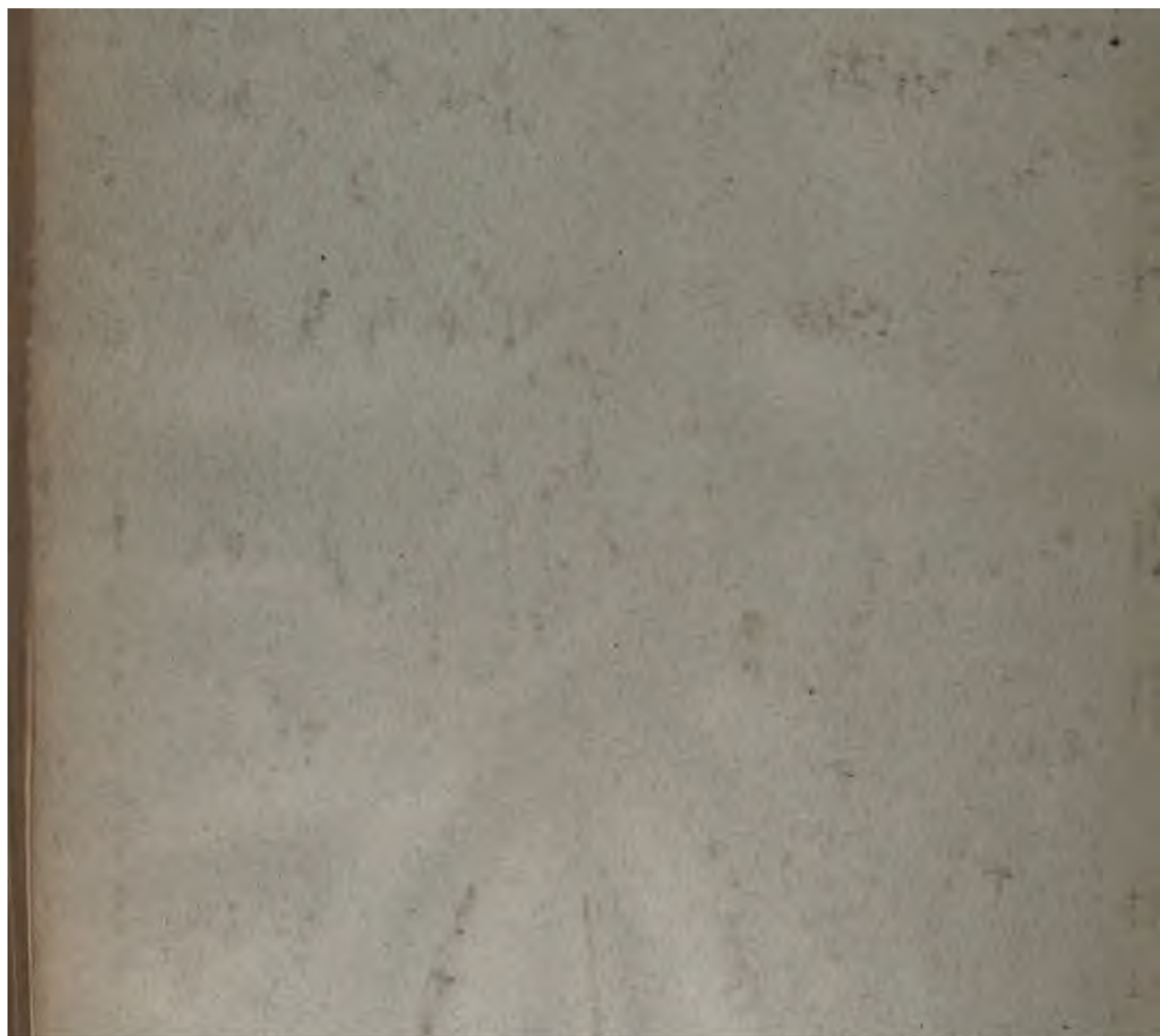
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